The Builder.

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Old London Spas.

NEW things are more affected by fashion than the art of healing. Medicines that were in vogue yesterday are forgotten to-day, and the health-resorts of one generation are neglected by the next. In the last and previous centuries it was the fashion for both the sick and the healthy to drink the water at Bath and other places; but, in the present century, sea-side watering places have almost superseded the inland ones.

London and its environs were formerly largely supplied with wells proper for drinking and bathing purposes, and many cures were recorded of these healing springs. No one would now think of coming to London to drink the waters, and yet some of the spas are still in existence. William Fitz-Stephen, a monk of Canterbury, writes, in his account of London in the time of Henry II.,—"There are also about London, on the north of the suburbs, choice fountains of waters, sweet, wholesome, and clear, streaming forth among the glittering pebble-stones: in this number, Holy Well (*fons sacer*), Clerken Well (*fons clericorum*), and St. Clement's Well (*fons sancti Clementis*) are of most note, and frequented above the rest, when scholars and the youth of the city take the air abroad in the summer evenings." The Holy Well here referred to was originally a "sweet, wholesome, and clear" spring at Shoreditch, which in Stow's time was "marred with filthiness purposely laid there for the heightening of the ground for garden-plots," and was afterwards entirely choaked up. The well gave its name to a Benedictine Nunnery of St. John the Baptist near by, and High-street, Shoreditch, was formerly called Holywell-street. The site of St. Clement's Well is marked by the neighbouring Holywell-street in the Strand. Although many believed in the health-giving properties of these springs, others were more sceptical, and in Thomas Powell's "Tom of all Trades" (1631) is the following recipe for making a holy well:—"Let them finde out some strange water, some unheard of spring. It is an easie matter to discolour or alter the taste of it in some measure (it makes no matter how little). Report strange cures that it hath done. Beget a superstitious opinion of it. Good fellowship shall uphold it, and the neighbouring townes shall all sweare for it." In a curious little book published in 1661, and entitled "Britannia Baconica, or the Natural Rarities of England, Scotland, and Wales," the author (Joshua Childrey) mentions two spas in London,—"The water of Crowder's Well (saith the author of Tactometria) on the back side of St. Giles by Cripplegate, and that of the Postern spring on Tower-hill, have a very pleasant taste like that of new milk, and are very good for sore eyes. But Crowder's Well is far better of the two. An ancient man (saith the same author) in London whensoever he was sick, would drink plentifully of this Crowder's Well water, and was presently made well; and whensoever he was overcome of drink he would drink of this water, which would presently make him sober again . . . I have heard it reported (but I would have further trial made) that the water of the Postern spring on Tower-hill, being let stand for several days to settle will have in the bottom of it a yellow sediment, both in colour and substance." Crowder's Well is described by Maitland as still, in his day of great reputation, and its memory still lingers in Well-street. Crowder is the old word for minstrel, and survives in the surname Crowther. The proprietors of the various spas were not likely to allow them to remain unattractive, and we therefore find that some laid out gardens and built assembly-rooms for the benefit of their patrons; thus at St. Pancras Wells there were pump-rooms, a long room (60 ft. by 18 ft.) and extensive gardens laid out for the promenading of those who drank the waters. In 1729 "Pancridge Wells, with a garden, stable, and other conveniences," was to be let, and in the following year the new proprietor published a bird's-eye view of the place, in which the various buildings, the avenues of trees, the ladies and gentlemen walking about, Old St. Pancras Church, the hills of Hampstead and Highgate, and the various roads and footways to the spa are all carefully marked. The waters were "surprisingly successful in curing the most obstinate cases of scurvy, king's evil, leprosy, and all other breakings out on the skin," and Dr. Russel in his treatise on mineral waters describes them as considerably diuretic and somewhat cathartic. In 1769 the proprietor advertised as follows:—"St. Pancras Wells waters are in the greatest perfection, and highly recommended by the most eminent physicians in the kingdom. To prevent mistakes, St. Pancras Wells is on that side of the churchyard towards London, the house and gardens of which are as genteel and rural as any round this metropolis; the best of tea, coffee, and hot loaves every day, may always be depended on, with neat wines, curious punch, Dorchester, Marlborough, and Ringwood beers, Burton, Yorkshire, and other fine ales and cyder; and also cows kept to accommodate ladies and gentlemen with new milk and cream, and syllabubs in the greatest perfection. The proprietor returns his unfeigned thanks to those societies of gentlemen who have honoured him with their country feasts, and humbly hopes a continuance of their favours, which will greatly oblige their most obedient servant, John Armstrong. Note, two long rooms will dine two hundred compleatly."

St. Chad, the missionary, who introduced Christianity among the East Saxons, was considered after his canonisation as the patron saint of medicinal springs, and on the east side of Gray's Inn-road, near King's-cross, there stood a tenement called St. Chad's Well House, where might be drunk the waters which were once strongly recommended by the medical profession. When this place was frequented there was no King's-cross, and the neighbourhood was known as Battle-bridge, a name that originated, it will be remembered, in the tradition that Boadicea was taken prisoner here after a bloody battle with the Romans, and that King Alfred fought the Danes at the same spot. The characteristic name of Battle-bridge was superseded by that of King's-cross on account of an execrable stuccoed statue of George IV., which was erected by some persons of infinite bad taste, and is gibbeted in Pugin's "Contrasts." In 1842 the statue was cleared away. St. Chad's Well was at one time a favourite spa, and the prices charged for the privilege of drinking its healing waters were one guinea a year, 9s. 6d. quarterly; 4s. 6d. monthly; 1s. 6d. weekly; or 6d. for a glass. Hone writes in his "Every-day Book,"—"The miraculous water was aperient, and in years gone by was quaffed by crowds of invalids, who used to flock hither to drink it." The comedian, Munden, who lived at Kentish-town for many years, made a point of visiting St. Chad's Well three times a week to drink the waters, and Sir Alan Chambre, at one time Justice of the Court of Common Pleas, did the same when he lived at the Mansion-house, Highgate. Mr. Alexander Mensall, who kept Gordon-house Academy at Kentish-town for fifty years, had great faith in the efficacy of the waters, for he used to walk with his pupils once a week to drink them, in order to keep the doctor out of the house. When St. Chad's had fallen to decay the charge for a glass of the water was reduced to one-halfpenny. In 1837 "the well-known and valuable premises, dwelling-house, large garden, and offices, with the very celebrated spring of saline water, called St. Chad's Well," were sold by auction at Garraway's Coffee-house, and in the particulars of sale it is asserted that "in proper hands it would produce an inexhaustible revenue, as its qualities are allowed by the first physicians to be unequalled." In 1840 the new proprietor (William Lucas) issued a handbill, and a pamphlet, in which the virtues of the spring are set forth with sufficient amplitude. "The celebrity of these waters being confined chiefly to its immediate vicinity for a number of years, the present proprietor has thought proper to give more extensive publicity to the existence of a nostrum provided by nature, through Divine Providence, approaching nearest the great desideratum of scientific men and mankind in general throughout all ages; namely a universal medicine. The frequently attested evidence of those relieved, and their fervent regret that the existence of such an immense benefit to mankind should be so little known, has been the cause of calling forth the present medium of communicating a source of relief to the sufferer." Further on it is stated, with very little regard to historical accuracy, that St. Chad himself was healed of a disease by these same waters.

We now pass on to notice a considerably more famous spa, viz., Bagnigge Wells. There is a tradition that Bagnigge House was once inhabited by Nell Gwynne, and that here she often entertained Charles II. and the Duke of York. In those days the old mansion stood on the green slope of a hill, and a clear river rippled through the pasture-land around it. After being inhabited by various tenants, it came into the possession of a Mr. Hughes, who found that the oftener he watered his flowers the worse they throve; and this circumstance drew attention to the character of the water. In 1757, John Bevis, M.D., examined it, and found that there were two springs, one producing a chalybeate and the other a cathartic. Shortly after this discovery the proprietor opened his house as a public spa; and in 1760 Dr. Bevis published "An Experimental Inquiry concerning the Contents, Qualities, and Medical Virtues of the two Mineral Waters of Bagnigge Wells, near Pentonville, London." In the "Shrubs of Parnassus" (1760) are some lines entitled "Bagnigge Wells":—

> . . . "There stands a dome superb,
> Hight Bagnigge; where, from our forefathers hid,
> Long have two springs in dull stagnation slept;
> But taught at length by subtle art to flow,
> They rise, forth from oblivion's bed they rise,
> And manifest their virtues to mankind."

Bagnigge Wells owed their origin to the discovery of the medicinal waters, but shortly after they were opened the place was more frequented as a tea-garden, or minor Vauxhall, than as a spa. The gardens were extensive, and were ornamented with clipped avenues of trees and leaden statues, and in all directions little wooden Cupids spouted water in the air. Engravings were published of the gardens and pump-room, and the plays and verse of the time are full of references to them. In the prologue to Colman's "*Bon Ton*" (1775) we read,—

> "Ah! I loves life and all the joy it yields,
> Says Madam Fupock, warm from Spittlefields.
> Bon Ton's the space 'twixt Saturday and Monday,
> And riding in a one-horse chair on Sunday;
> 'Tis drinking tea on summers' afternoons,
> At Bagnigge Wells, with china and gilt spoons."

Five years later a writer says,—

"The cits to Bagnigge Wells repair,
To swallow dust and call it air."

It appears soon to have obtained a bad reputation as the favourite resort of light women, and we therefore need not follow its downward career any further.

Clerkenwell (which takes its name from the well where the parish-clerks of London used to meet) was long famous for its mineral waters and Sadler's Wells, the Islington Spa, or New Tunbridge Wells, and the London Spa were all in very close proximity to each other. On the site of Sadler's Wells Theatre there stood, in 1683, a wooden building, called Sadler's Music House. In this same year the proprietor, one Sadler, a surveyor of the highways, discovered in his garden, while digging for gravel, a mineral spring, which soon became celebrated for its curative properties. Sadler, with a keen sense of the best mode of catching his public, obtained the services of Thomas Guidot, a doctor of physic, to puff his well, and in 1684 was published,—"A true and exact Account of Sadler's Wells; or, the new Mineral Waters lately found at Islington: treating of its Nature and Virtues. Together with an Enumeration of the chiefest Diseases which it is good for, and against which it may be used; and the Manner and Order of taking it. *Published for publick good*, &c." The waters appear soon to have become popular, and we read of 500 or 600 persons frequenting it every morning. This success caused much jealousy among the proprietors of other spas; and in the same year 1684, there appeared an opposition publication, entitled "An Exclamation from Tunbridge and Epsom against the new-found Wells at Islington." In spite of opposition, Sadler's Wells continued to prosper, and it has left its mark in literature. The following lines are from "A Morning Ramble; or, Islington Wells Burlesqt" (1684):—

"People may talk of Epsom Wells,
Of Tunbridge Springs which most excells;
I'll tell you plainly by my ten years' practice,
Those are good but for one disease;
To all distempers this gives ease."

In the prologue to Nahum Tate's farce, "The Duke and No Duke" (1685), the place is referred to in the following uncomplimentary terms:—

"I thought this season to have turn'd physician,
But now I see small hopes in that condition;
Yet how if I should hire a black flower'd jump,
And ply at Islington, doctor to Sadler's pump!"

Evelyn went in June, 1686, "to see Middleton's receptacle of water, and the new Spa Wells near Islington."

Dr. Guidot states that, before the Reformation, the water was "very much famed for several celebrated cures performed thereby, and was thereupon accounted sacred, and called Holy Well. The priests belonging to the priory of Clerkenwell, using to attend there, made the people believe that the virtues of these waters proceeded from the efficacy of their prayers. But upon the Reformation the well was stopped up, upon the supposition that the frequenting it was altogether superstitious, and so by degrees it grew out of remembrance, and was wholly lost." After its discovery again, in 1683, it appears soon to have been neglected, for in an advertisement of the year 1697, the statement is made that "Sadler's excellent steel waters at Islington, having been obstructed for some years past, are now open and current again, and the waters are found to be in their full vigour, strength, and virtue as ever they were, as is attested and assured by the physicians who have since fully tried them." After this time little attention was paid to the waters, and the crowds that flocked to the place came to enjoy the varied entertainments that were provided for them. Nearly 100 years afterwards the position of Sadler's Wells Theatre must have been a retired one, for the various advertisements of the performances conclude with the information that "a patrole of horse and foot are stationed from Sadler's Wells Gate, along the New-road to Tottenham-court Turnpike; likewise the City-road to Moorfields; also to St. John-street, and across the Spa-fields to Rosoman's-row, from the hours of eight to eleven."

Islington Spa or New Tunbridge Wells has been confused by some writers with Sadler's Wells, but it was altogether a distinct place. The points of junction of the parishes of Islington and Clerkenwell are not very well understood, and therefore it is that portions of Clerkenwell are popularly known as Islington. The famous Angel Inn at Islington is really, as our readers know, in Clerkenwell; and the Islington Spa, near the New River Head, is also in the same parish. The date at which the spa was discovered, and the gardens opened is not known, but the place appears to have been in existence in 1685, for on the 24th of September of that year we find the following advertisement in the *London Gazette*:—"Whereas Mr. John Langley, of London, merchant, who bought the Rhinoceros and Islington Wells, has been represented by divers of his malicious adversaries to be a person of no estate or reputation, nor able to discharge his debts, which evil practices have been on purpose to ruin and destroy his reputation," &c. In May, 1690, the *London Gazette* contains another announcement of this spa:—"These are to give notice that the well near Islington, call'd New Tunbridge, will be opened on Monday next, the 25th instant, during the whole season for drinking the medicinal water, where the poor may have the same gratis bringing a certificate under the hand of any known physcian or apothecary. The coffee-house within the garden there is to be lett at a reasonable rate." The name of New Tunbridge was given to the Islington Well on account of the similarity that existed between the composition of these waters and those at Tunbridge Wells. The price of admission to the gardens was for many years threepence, and in 1691, Ned Ward published a burlesque poem, entitled "The Islington Wells, or the Threepenny Academy." The author visited the place at seven o'clock in the morning and he describes what he saw as follows:—

"Islington's renowned wells,
Where twice or thrice a week, most duly,
In the months of May, June, August, July,
* * * * *
Lawyers, divines, civilians, and Quakers,
The tradesman and his lovely spouse,
The enamour'd youth and's dear Queen Blouze,
Taylors and other trades which rack
Invention to adorn the back,
Go there to make their observation,
Upon the dresses of the nation,
Of either sex, whole droves together,
To see and to be seen, flock thither
To drink, and not to drink the water."

In the following century the New Tunbridge Wells had become a most fashionable resort, and Lady Mary Wortley Montague took credit to herself for having made the efficacy of the waters known to the *beau monde*. In the year 1733 the newspapers appear to have been full of reports concerning the place, for in June the Princesses Amelia and Caroline, daughters of George II., frequented the gardens daily in order to drink the waters. On these occasions the concourse was so great that the proprietor took above 30*l.* in one morning. On the birthdays of the princesses they were saluted with a discharge of twenty-one guns as they passed through the spa-field, which was generally filled with carriages. On the 8th of June the following piece of news was published:—"The surveyor of the New River Water-works hath been to wait upon Richard Arundel, esq., surveyor general of the King's-works, about making a commodious passage in the Cold Bath-fields for her Royal Highness the Princess Amelia to go to New Tunbridge Wells." When the Princess left off visiting the gardens she presented the master with twenty-five guineas, and each of the water-servers with three guineas, and one guinea to each of the other attendants. In 1734 a poem entitled "The Humours of New Tunbridge Wells at Islington" was published, and the poet dilates upon the mixture of all ranks of society that was to be seen there:—

"Whence comes it that the shining great,
To titles born and awful state,
Thus condescend, thus check their will,
And scud away to Tunbridge Wells
To mix with vulgar beaux and belles?
* * * * * * *
Behold the walks, a chequer'd shade,
In the gay pride of green array'd,
How bright the sun! the air how still!
In wild confusion there we view
Red ribbons group'd with aprons blue,
Scrapes, curtsies, nods, winks, smiles, and frowns;
Lords, milkmaids, duchesses, and clowns,
In their all-various dishabille."

The Spa continued to be a fashionable resort for some years after this date. At the end of one of the advertisements of the place in the *London Chronicle* (April, 1760), we read, "Ladies and gentlemen who come from Hanover and Grosvenor squares and parts adjacent may come to this place, without going over the stones, by striking into the new road from Portland-street to Islington, which makes it an exceedingly pleasant airing from all that part of the town and neighbourhood. N.B. There are very pleasant and commodious lodgings to be let with the conveniency of walking in the gardens, which are laid out in an agreeable and elegant taste, and boarding if required. The prices for breakfasting are ninepence each person, and for drinking tea in the afternoon sixpence, and coffee eightpence; and no other liquors are sold at this place, which enables the proprietor to keep out all bad and improper company."

In Dodsley's "London and its Environs" (1761) the Spa is noticed as follows:—"There is here also a spring of chalybeat water in a very pleasant garden, which for some years was honoured by the constant attendance of the late Princess Amelia and many persons of quality, who drank the waters: to this place, which is called New Tunbridge Wells, many people resort, particularly during the summer, the price of drinking the waters being 3d. for each person." Soon after this the Spa declined in repute, and in 1777 the proprietor became a bankrupt, although a short time previously he had stated that the number of persons receiving benefit from the waters was scarcely to be credited; and George Colman had made one of his characters in a comic piece, entitled the "Spleen, or Islington Spa" (1776), say, "The Spa grows as genteel as Tunbridge, Brighthelmstone, Southampton, or Margate. Live in the most sociable way upon earth—all the company acquainted with each other. Walks, balls, raffles, and subscriptions. Mrs. Jenkins, of the Three Blue Balls; Mrs. Rummer and family from the King's Arms; and several other people of condition, to be there this season! And then Eliza's wedding, you know, was owing to the Spa. Oh! the watering-places are the only places to get young women lovers and husbands."

Attempts were made to bring the waters once more into fashion, and in 1783 *The Diary* contained the following puff:—"The virtues of the waters have been found so efficacious, as to have greatly established themselves in public opinion; so many have been the cures they have latterly performed, that we cannot be surprised should we hear of Tunbridge in Kent being entirely deserted the ensuing season"; but the attempts were in vain, and the sun of their prosperity set for ever.

The London Spa, which gave its name to the Spa Fields, is reputed to have been known as early as the year 1206, but there is no authentic notice of it before 1721, in which year an elaborate puff of the establishment was published in "May Day, or the Original of Garlands":—

"The well neglected, now each from the spring
Her pail fills up, the news to town they bring.
The rabble flock in shoals who hear its fame,
To try its virtue.
* * * *
Now ninepin alleys and now skittles grace
The late forlorn and desolated place;
Arbours of jasmine, fragrant shades compose
And numerous blended companies enclose,
The spring is gratefully adorn'd with rails,
Whose fame shall last till the New River fails."

There are views of the place about this date; in one a rural-looking building with outhouses and surrounded by trees, is shown; and in the other a fashionable company of ladies and gentlemen are seen standing by the well and drinking the waters. The water, however, soon appears to have become of secondary importance, and to have had little chance of favour in comparison with "the oft-famed flavoured Spaw ale." In 1733 "Poor Robin's Almanack" states that,—

"Now sweethearts with their sweethearts go
To Islington or London Spaw:
Some go but just to drink the water,
Some for the ale which they like better."

Although the London Spa never had the fashionable fame of the Islington Spa, yet it was a well-known spot, and several places were described as near it. Thus the *New Wells*, a favourite place of entertainment, was stated in the advertisements to be "near the London Spaw." The New Wells Theatre was turned into a chapel by John Wesley, in 1752.

Near the Foundling Hospital were the Powis Wells, the water of which was used about the middle of the eighteenth century, both internally and externally. Our notices of the London spas have occupied so much space that we have but little room left to mention those of the outskirts. In 1773 an advertisement tells us that the Kilburn Wells were "in the utmost perfection, the gardens enlarged and greatly improved, the great room being particularly adapted to the use and amusement of the politest companies, fit for either music, dancing, or entertainment." Hampstead was highly famed in the last century for its chalybeate spring, and large numbers frequented the village to avail themselves of the mild dissipation of the Long Room. It was to this place that Evelina went with her aunt,

Madame Duval, and the snobbish Mr. Smith. She told Mr. Villars, her guardian, that "this room seems very well named, for I believe it would be difficult to find any other epithet which might with propriety distinguish it, as it is without ornament, elegance, or any sort of singularity, and merely to be marked by its length." In Lambert's "History of London" (1806) we read that "two other kinds of mineral water have been lately discovered, near Pond-street, by Mr. Goodwin, a skilful practitioner of physic in this village, who has published the analysis of them, from which it appears that one is a saline cathartic, similar in its quality and effects to that of Cheltenham; and the other of a sulphureous nature. It may be of importance to the inhabitants of the metropolis who require the use of mineral waters, to know that such as these can be obtained without the expense of a distant journey." At Tottenham there were two famous wells. St. Loy's Well was said to be always full, but the water never ran over, and Bishop's Well had the reputation of having performed some miraculous cures.

St. George's Spa was established as a place of entertainment on the discovery of a mineral spring about the middle of the last century in a field that now forms part of Bethlem Hospital. The place was afterwards known as The Dog and Duck, because the principal amusement to be obtained there was the cruel sport of duck-hunting. It was then an out-of-the-way spot; but,—

> "Saint George's fields are fields no more;
> The trowel supersedes the plough;
> Swamps, huge and inundate of yore,
> Are changed to civic villas now."

A chalybeate spring was discovered at Bermondsey at the end of the last century, and Bermondsey Spa was then converted into a tea-garden by the proprietor, Mr. Keys, who was a most ingenious man. In 1795 J. T. Smith, the author of a "Book for a Rainy Day," visited the Spa with the object of seeing the pictures which Keys had painted and exhibited there, and he was highly gratified with the sight. Keys told Smith that Sir Joshua Reynolds paid him two visits. "On the second, he asked me what white I had used; and when I told him, he observed, 'It is very extraordinary, sir, how it keeps so bright; I use the same.' 'Not at all, sir,' I rejoined, 'the doors of this gallery are open day and night; and the admission of fresh air, together with the great expansion of light from the sashes above, will never suffer the white to turn yellow. Have you not observed, Sir Joshua, how white the posts and rails on the public roads are, though they have not been re-painted for years? That arises from constant air and bleaching!'"

Here we close our notice of old London Spas with the remark that change of air and scene have as much to do with the cure of patients as the medicinal waters, and that as long as the wells were out of town they were frequented, but when they were built round, the public ceased to visit them. Now the external application of water is more esteemed than its internal use, and therefore baths have superseded spas.

"THE SHADOW OF DEATH."

THE large board which, bearing the above inscription, somewhat ominously overhangs the pavement of Old Bond-street, has by this time drawn numbers of people, including not a few of our readers, to the curtained and dimly-lighted chamber, where a silent and somewhat mysterious worship is paid to the work of art which its author has thus designated. The upper room at No. 39 B, is not (at present, at least) as ordinary picture-galleries. We go there solemnly, as if we were going to church, and criticise or admire in reverential whispers, or read in a docile and teachable spirit the painted record of the artist's labours, and his intentions, and of the lesson which his work, rightly interpreted, is to convey to the thoughtful spectator. This is something different enough, at least, from the annual Academy promenade; and one may readily admit that if a work has been the product of earnest study and thought,—if in it a great ideal has been realised,—it is thus that it should be studied, abstractedly and thoughtfully, and not amid a crowd of other works of varying aims and excellences. A painter who chooses to put his work to this severe test necessarily assumes that it does possess the qualities which warrant study of this kind, and challenges criticism, therefore, from this point of view. That Mr. Holman Hunt's last work has been produced under the influence of a serious aim, and of careful and diligent study, we have his own assurance, in addition to such evidence as the execution of the painting affords; that he has found a public for it cannot be denied. The standing claimed for the work, and the attention directed to it, provoke consideration as to how far these claims rest on a genuine basis in principle, as well as in regard to the execution of the work,—a consideration which bears upon the motive and meaning of the painter's art generally.

"This picture was painted," we are told, "in the conviction that art, as one of its uses, may be employed to realise facts of importance in the history of human thought and faith." This idea of the value of realism in historic painting is, of course, only a part of the movement in that direction with which, as applied to written history, Niebuhr and Carlyle have familiarised us, and which Ruskin has advocated in regard to painting, in his suggestions (in rather curious taste) about Peter in his dripping coat, and Achilles "cutting pork chops," &c. The principle thus assumed is definite and logical enough, up to a certain point. We are to seek to revivify the great characters of history, not in the light of the legendary halo cast around them during the progress of centuries, but by endeavouring to realise the actual tangible facts of their every-day life and action as it would appear to us if we could be suddenly transported back to the time in which they lived. In applying this principle to a representation of the founder of Christianity, Mr. Hunt is, in fact (though probably he and his friends would utterly repudiate the connexion), treading in the steps of Rénan and his school of historic criticism; or, rather, he would be doing so if he carried out logically the principle on which he professes to act. And a representation of Christ in his purely human aspect, as the humble and earnest worker, subject to every-day toil and anxiety, yet with the consciousness of a high mission expressed in his countenance,—a representation which should in any adequate degree assist us to realise this idea, would deserve to be called a great picture, and would certainly demand all the powers of a great artist, a man at once painter and poet; for such a representation, in the absence of authentic portraits, must evidently be as purely a work of imagination as any one of the numberless conventional representations which the art of painting has produced. This ideal attained, an attention to the archæological correctness of the accessories and details is a point which, so far as there were facts to go upon, would give an additional interest to the picture, and would undoubtedly contribute towards a realisation of the outward conditions under which the character represented was placed.

But mere realism of details, even if attainable, will bring us no nearer what we really demand in such a picture, an adequate conception of the figure which is the centre of the whole history. In regard to the expression and character in the countenance of Christ, Mr. Hunt does not offer,—as far as we understand him, scarcely pretends to offer,—anything which can give us a new and more vivid ideal than we at present have. He professes to deal with facts only, and he can get no facts for the likeness of Christ. The face here presented to us can therefore have no more historic value, in spite of its being painted from an Oriental model, than any other representation which painting can show, and as an ideal representation, it is far below many; it is a commonplace countenance, and the sole suggestion in it of anything beyond the ordinary run of humanity arises, oddly enough, from a certain resemblance in the pose and outline of the head to some of the conventional representations of Christ, which have become, in a manner, sanctified to us by long association. But, to make up for this, we are presented with a saw taken "from early Egyptian representations of this tool;" other tools "from a collection of ancient carpenters' implements bought at Bethlehem," a censer of *cloissonné* enamel, "used in the East at a much earlier time than that illustrated here;" and so on. But does all this bring us one whit nearer to what should be the main object of the picture? The most that can possibly be said is, that Christ, if he really worked as a carpenter (of which there is but very questionable evidence), *may* have used some such tools as these. And when we come to the incident which gives the title to the picture, the contrast between the profession of realism and the actual achievement is complete. That the arms upstretched in fatigue should cast the form of a cross on the wall; that the shadow of the hands should approximate to the tools or spikes hanging there; that the mother of Christ should catch sight of this and read in it the prophecy of her son's future fate—what is all this but to confess that the apostle of realism in painting finds it necessary to invent a foolish and utterly improbable legend, in order to give to his picture a popular interest, which he is unable to achieve by legitimate means? A more unfortunate, not to say absurd contrast, between the artist's professed aim, and his actual treatment of the subject it would be scarcely possible to imagine. So far from the picture giving any new help towards realising the human personality of Christ, it is simply another contribution to the legendary history associated with that name, and the affected realism in regard to possible tools, vases, and wood-rests, can only raise it to the position of "a legend with a circumstance."

In regard to the execution of the picture, those who know Mr. Hunt's conscientious and painstaking manner of working will not find him fall much below his reputation in this work. The principal figure is one of the most noticeable studies of the human figure—spite of some questionable anatomy about the chest—which modern painting has produced; and the mother, kneeling with her head turned from the spectator, is more than this,—is a figure singularly successful in regard to complete natural ease of pose and action, as well as in the drawing of the hands, and the flowing lines and admirable texture of the costume. But the work as a whole has the two faults of manner which have been so often unfortunately exemplified in the school of painting of which Mr. Hunt is one of the most gifted adherents—the ignoring of aërial perspective, and the want of concentration in the composition. The principal figure stands, as shown by the perspective of the floor, some feet in advance of the wall; but the upper portion of the figure in no way stands out from the wall, which at this point appears to be close behind it; and the eye is distracted in looking over the picture by the multiplicity of small incidents and objects thrust forward at every point, and all seeming to compete for notice. Such an attempt at literal realisation of a scene could only be really successful if a picture could be painted double, in the same manner as a stereoscopic slide, and the effect produced by the angle of vision of the two eyes be realised. No doubt objects in a room, and within a few feet of each other, do present themselves to the eye with almost equal prominence and clearness of detail. But when we paint on a flat surface, and have neither the angular measurement of vision, nor what the astronomers call "parallax," from change of position, to aid us in estimating distances, we must fall back upon a conventionalised aërial perspective (even where distances are not so great as to bring this into play in reality), in order to put subordinate objects in their proper places. The greatest masters of painting were perfectly aware of this necessity, the neglect of which by the modern English realistic school destroys all proper subordination in their productions, and causes the most insignificant details to press upon the eye with the same claim for attention as the principal figure, and necessarily to destroy or impair the effect of the latter, insomuch that the very elaboration of detail intended to "complete," operates in the contrary direction, and a large proportion of the artist's labour and skill is actually expended in frustrating, as in this case, the very aim which he professes to have had solely and seriously before him.

We quit this picture with a feeling of regret that an artist possessed of unusual powers, enthusiasm, and earnestness, should have spent so much time and labour in an attempt which, however interesting and ambitious, must be pronounced a failure, æsthetically, because entered upon from a questionable starting-point at best, and not even carried out consistently from that point; and which is unsatisfactory in effect, as every picture must be in which the relations between actual objects projected in perspective, and their representation on a flat plane, are so unfortunately ignored. And we cannot avoid the reflection, that the time spent in the collection and study of details of Oriental *bric-à-brac*, of (we suspect) doubtful authenticity, might have sufficed to produce two or three paintings of far higher intellectual value than this one, could the painter only have realised more clearly what it was

which was most important to his subject, and have distinguished between what painting can and what it cannot adequately tell us. As it is, we stand before the work to learn the artist's idea, set forth to us in such lofty language in the printed analysis, — we admire the accurate representation of the muscles of the human frame, the, for the most part, correct drawing, the brilliant painting of texture, and sparkle of detail in dresses and accessories,— till, attempting to combine these into a living and intelligible whole, we find ourselves suddenly at the point beyond which the work has no further message to us, and in the words of the poet,—

"We start—for *soul* is wanting there."

LORD DERBY AND SCIENCE FOR WORKING MEN.

IN this country it is said that national vanity has inspired a conviction that what we are, and what we have done, is due to ourselves, and is the indestructible property and inalienable heritage of our race; and it is quite certain that we do indeed *think* so, and not only think so, but do take opportunity to now and then say it as well. And till lately it seemed true. But truth to say, a change is coming over the world, so comprehensive and revolutionary that it may be fairly enough said, that the changing point of time in which it is occurring, will divide the history of the human race into two broadly marked and well-defined epochs, viz., — the *past*, when every nation was an isolated individuality, and did all its work, whatever it was in its own way; and the *future*, when, as we may fairly predict, every nation will hold intimate communication with every other nation, will interchange thoughts, and borrow mutually ways of work, and will work each one, more or less, in foreign materials. That this is all in the future, who can doubt? All things tend to it. No one will dispute as to the ways of the great past, from which the present has grown, and out of which again the future would have grown, had not this new disturbing or *changing* influence intervened. No time surely can be lost in the attempt to define these positions accurately, and to balance their so opposite merits and advantages; and Lord Derby, in his address at Manchester, when inaugurating the "Society for the Promotion of Scientific Industry," did somewhat to help us towards a right understanding of this momentous problem. Be it observed, that when talking of the past, the English past history and work, we might have looked to England alone; but when speculating on the *future*, the problem becomes cosmopolitan and world-wide; and every country, and mode of human work must be had well in view. Two more opposite influences could not be imagined.

To go into such a subject as this thoroughly and from the very origin of it, would be well nigh impossible within moderate compass, but some few passing thoughts on it may become suggestive. It is very startling to hear some of the remarks recently made very boldly, and as if beyond possibility of dispute. We have now, men say, "no *monopoly* of mechanical appliances," and machinery can now be produced nearly if not quite as, some say more, cheaply in Belgium as in England. Will all admit this? Surely the general British impression is, that in machinery, and in all that machinery involves, John Bull is all but supreme, and has it his own way. It is the machine power, be it observed, that so cheapens all things, no matter much what; and the cheapness it is of England's "manufactured" goods, as Cobden loved to call them, that has secured to this glorious little island the "market of the world." It is not the form, and comeliness of the British-made hardware, and crockery, and ironmongery, that has made them cosmopolitan, but their *cheapness*; and their cheapness does not come of labour, human and intelligent labour, but of ingenious and powerful machinery. And here it is that we would venture to ask Lord Derby what he thinks would come to pass if but England on the one hand, with all her powers of producing cheaply common crockery, for example, had to compete, in the world's market, with such a place,—supposing it now possible that any such could exist,—as old Etruria, with its hand-made "ware," and its *hand-drawn* "ornamentation on it." We are speaking here for simplicity's sake, of the rough and simply useful, of which specimens from the old unmechanical times may be seen in the British Museum, and other collections, and occasionally in fashionable auction-rooms; and the other, in the cheaper china shops, as in the New-cut, in Golden-lane, and round about Westminster Abbey, where the shadows are darkest and most picturesque. Is *art*, fine art, whether rough or fine, cheap or dear, no element in this question? and if it be, how must it in the future influence the "producing power"? In short, is cheapness simply even in common things and for ordinary people always now, and in the future, to rule the market? Must machinery in the future be everywhere and always triumphant and ride down everything? Must art come to be always and entirely machine-produced all the world over, the all but perfect engine doing the work?—for that is the real tendency of things, and one had almost said it, the *hope* of the future. Is art to become in the end entirely mechanical, and machine-produced, and is the artistic hand of man to hang down by his side a useless burden? No science, be it here observed, can here avail; no "chemistry" can do the work of expressional feeling, manifesting itself *through* the obedient hand. No subtle chemistry or marvellous mechanism can paint a picture, or even mix the colours on the pallet. We know not how a greater boon could be bestowed on the men and women of this generation than that of pointing out, definitely and clearly, *what* the machine can do, and what it cannot do. It can certainly plough a field, but it cannot paint the hedge-row which it has ploughed up. It can, indeed, coin the gold, and count it afterwards with unerring certainty, but it cannot invent or draw the "head" on it. It can manufacture the paper by the mile, and print on it afterwards, but it cannot suggest the printed matter. Science is as helpless here as the machine it has brought into being; and the foreigner, and even the German, who is now running us so hard to all appearances, is on a fair level with the Englishman. There is no escape from the difficulty here indicated. There is, and must be, a something more in the world's destiny than a triumphant mechanism doing all things, and in its perfection and completeness making the *hand* of man, as far as production is concerned, all but useless. By joint action, says Lord Derby, triumphantly, instead of isolated action, by following the rule of doing nothing for yourself which you can get nature, or a machine, to do for you, we have already succeeded in making our 22 millions, "including women, children, and even the helpless of all sorts," do the work of at least 500 millions of able-bodied men! What more can be said? But can the *soul* of man live on such work? And then there is another item in this inquiry that is still more perplexing, and one that has hardly been thought upon with that care which its immense importance demands. It goes to the root of this inquiry, and must puzzle those who, with Lord Derby, are so earnestly bent on educating the working man in the principles and mysteries of science. It is that of the division—the almost, in some cases, infinitesimal "division of labour,"—division carried so far, and so completely, that the man doing any certain work cannot fairly be said to know, or even to care, what it is for! He is all day long doing some small addition of work to the small end of the fragment of a machine. He is perpetually repeating the simple and, by itself, useless process. He works with the speed and regularity of a machine, and his hand vibrates like the pendulum of a clock. He can hardly go wrong. No science is to him, and for this special purpose, necessary, however much it may be so to the original contriver of the machine. His work, or the part he does of it, is too simple and isolated. It may be almost likened to the production by one man of the cogs of a wheel: he knows not what the wheel, when finished, is to do, or where it is to go. Adam Smith, in the very commencement of that wonderful book which inaugurated the economical era, and pointed out the road to free trade, dwells on the immense importance of this division of labour; and affirms that, by the use of it, one man can do the work of ten, and illustrates his position. Nay, he does more than this: he affirms that not only is some ten, or twenty, or fifty times more work done, but it is better for the workman himself. His *mental* labour is less, and his muscular efforts are less exhausting. Indeed, to speak plainly, he needs for his work to have no head at all. We might illustrate this from personal observation in a thousand ways, but it is needless, for every advanced and scientific trade or manufacture will illustrate it to any one who is curious on the subject. Any kind of patent machine will illustrate its action. Pin-making, cited by A. Smith himself, lock-making, the sewing-machine, which has worked almost as wonderful a revolution in society as the steam-engine itself, descending as it does into the lowliest abodes, and winning its wages where nothing else would, not even match-making. Match-box manufacture, a small sight to see in the excess of its humility and simplicity, and in its smallness of pay, and in the tender age of its workmen and workers, but nevertheless involving and containing in itself more of scientific mystery than Newton could fathom or explain, or than the mystic could dream of. We could go on, but all can easily see these things for themselves, and at small trouble if they care to do so. We are not here even hinting at a neglect of scientific teaching, even to the workman who is moving his hands as a machine, and with what Ruskin has called "paralytic regularity." But may not its importance and necessity to such as the workmen, as they at present are, be very much exaggerated? That the man acquiring it needs to be helped on his way, and made a more powerful instrument in the perpetuation of British commercial greatness and supremacy, is true. It might do good, and might make him a more powerful rival to his German confrère. Science, advanced science, may indeed do infinite good, like high art, but must not the circumstances and surroundings favour it first? The maker of a pin's head only, and at it all day long, and every day, and doing nothing else, not forming the body of the pin even, for the sake of variety, and change of bodily movement, how could science, or even art, affect him? But take from such the "division of labour" power, and put before him the gold wire, and put him to work as the Hindoo workman in his simplicity works, then indeed will the science of "applied metallurgy," and applied fine art as well, do him right good service, and he becomes an artist-workman, and science will be to him at once applicable and intelligible and interesting and useful! But then he cannot make pins for the whole world, while that world is doing something better perhaps, and more profitable, and more "advanced." A curious problem this, and we should urge Lord Derby, who is a thoughtful man, to think it out, and tell us what he concludes from it. It is worth a little thought, for the future lies in it. Free Trade, good as it is, has perhaps driven the world a little trade-mad, and forgets that man after all with all his shortcoming is something more than the human and organised end of a dead machine, —digging, and manufacturing, and carrying, and buying and selling. The "mute wonder" in his soul and in the world will every now and then assert itself. To do this takes up time, and time, we all know, is "steady work." But, again, there is one other consideration which may perhaps afford a hint to those, so many and influential, who are taking so much interest in the coming fortunes of the working man. It is the strange fact, for singular enough it is, of the uniformity of wages. Profits, as we all know, vary almost infinitely as trades and manufactures vary; but wages are pretty nearly uniform. Some of the lower kinds of mechanical work command as high a price as some of the most skilful and ingenious. And, what is even more momentous to the workman, this uniformity of wages appertains to the workmen generally in each individual trade. It is really surprising to find how wide apart men are in the same trade, while their wage is uniform. We have known some remarkable instances of this, and have wondered how it is that the price paid does not vary more with the character of the work done, and with the artistic —if we may use the word thus generally—value of the final result. Has machinery increased the force of this uniformity? Is the individual power of the workman in the future a thing to be prized and encouraged, or no? We confess we think it is, and that *artistic* power, *even in a workman*, is a higher ideal than a perfected machine, with a man, even if ever so scientific, by the side of it, and with his hand every now and then on a lever! We would commend these few thoughts to the consideration of the Scientific Industry Society, and their noble and accomplished president.

"Old Work at Whitehall."—With reference to a paragraph thus headed, Mr. Lord writes,—"In the corner house nearest the Home Offices was a panelled library with carved enrichments, and a remarkably well-modelled stucco (not carved) ceiling, the whole being a perfect specimen of Inigo Jones design."

SAVING THE TOWER AT ST. ALBAN'S.

AT the last meeting of the St. Alban's Archæological and Architectural Society, an account was given by Mr. John Chapple, the representative of Sir G. G. Scott, at the Abbey, as to the recent works. We give some notes referring to the central tower; a subject always interesting on account of the unique character of the building once in such jeopardy, but now one would hope safe for many a long year. The story was carefully told in our pages, as the result of close observation, when the critical time was just past,* but it will bear looking at again from a new point of view, and after this lapse of time. Perhaps we ought not to omit to mention that students of St. Alban's will for the future feel themselves indebted to Mr. Chapple for his painstaking plan of the Abbey church, to a scale of an inch to 32 ft., contributed to a little work recently published by Mr. R. Lloyd, one of the secretaries of the St. Alban's Society, "An Account of the Altars, Monuments, and Tombs, existing in 1428 in St. Alban's Abbey." This is a translation of three Latin documents (given in vol. i. of J. de Amundesham's "Annales," edited by Mr. H. T. Riley), illustrated with references to other works, and notes as to the actual buildings; altogether a useful piece of labour conscientiously done.

Mr. Chapple commenced by describing the course of discovery of the insecure state of the pier, on the north side of the Presbytery (13th August, 1870). Mr. G. G. Scott advised on that day that the pier in question should be immediately secured by shoring an arch on its eastern side; that the superincumbent triforium and clearstory should be supported by needling, and that the crushed brickwork of the pier should be removed in small portions, and the pier itself reinstated on a larger scale with sounder materials. Mr. Miskin, of St. Alban's, was employed, and by him as contractor the restoration of the Abbey has hitherto been satisfactorily carried out. The fixing of the necessary shoring occupied until the 26th August, on which day the first portion of brickwork was inserted. The north and south walls of the presbytery had been pierced with two very large openings, splayed so as in each instance to form a huge hagioscope, and cut in such an unscientific manner that the bond of the wall had been entirely destroyed. Thus, at this critical point both arcades were materially weakened, and rendered less able to resist the lateral thrust of the great central tower. The openings had merely been cased with brickwork; and the half-piers projecting into the presbytery were also cut away. The surfaces of the walls west of the communicants' step, as now in position, were lined with wainscot panelling, of the date, as written on the back of one piece, 1605. It became necessary to remove this panelling on the north side, when a very great danger was revealed, no less than the bursting of the north-east pier of the tower, and the crushing of the north wall of the presbytery. It was also noticed that the beautiful chantry of Abbot Ramryge, situated still further east than the work in progress, had, during the previous fortnight, shown evident fractures and dislocations. Its groining had been split open longitudinally; one half of the structure leaning towards the sacrarium, and the other half towards the north aisle. In addition to this the west wall of the chantry had been thrust to the extent of an inch towards the east. Such unmistakable signs of subsidence could not be disregarded; the immediate shoring of the large eastern arch of the tower, and the repair of the north-eastern and south-eastern piers were also ordered.

The tower, from its enormous bulk, being the heaviest in the kingdom, and its dimensions at 100 ft. in height, being no less than 46 ft. by 48 ft., with walls of that height of 7 ft. 4 in. in thickness, required shoring of great scantling and in large quantity. The shoring was necessarily attended with some little difficulty, particularly as it was necessary to avoid, as much as possible, proximity to the piers, in order to allow free access by the workmen to the crushed parts. Owing to the nature of the works, and the risk of a sudden slip of the tower, it was considered desirable that divine service should be discontinued in the choir and transepts, and should be held in another part of the Abbey. Accordingly the nave was hastily fitted up, and the first service in that portion of the Abbey for a long period of time, was held there on Sunday, 16th of October, 1870.

As the result of an examination into the state of the foundation of the south-east pier, it was discovered that a hole had been made in it at some remote period, presumably subsequent to the middle of the sixteenth century, of such magnitude, and in such a direction, that it seemed a sort of miracle that the stupendous structure had kept standing. Some decayed pieces of wood found in this hole had evidently been used as props, thereby enabling the excavators to proceed further with their work of destruction, until the whole pier was pierced nearly through, and the excavation was sufficiently large for a man to creep into the orifice. It is recorded that this mode of rapidly destroying large buildings was in some instances resorted to. When the excavations had been made to the very verge of safety for the operators, the wooden props were fired, and as they were consumed the whole structure collapsed. This large hole was filled with brickwork in cement, and the additional precautions taken to fill up the interstices occasioned by the irregular nature of the excavation with liquid grout, and the whole was surrounded to a depth of several feet with a bed of cement concrete. The foundations of the walls and piers of the Norman structure wherever they have been exposed to my observation, are about 7 ft. 6 in. wide, built in continuous walls throughout the whole length of the building,—thus better calculated to resist pressure than if each pier were built on an isolated base. The materials used in these foundations are flints well grouted, with occasional layers of Roman tiles; in fact, much resembling in form the Roman wall to be seen on the east side of the site of Verulam. The piers are built of tiles, these tiles not being continuous all over the area of the pier, but forming an outer casing only; the centre, or core, is formed of concrete composed of flint and rubble, with a very large admixture of lime. This was the common mode of building at this period, and indeed for some centuries later. To its imperfection is due the decay and ruin of many a noble building. The tower piers were so built. Had they been left alone they might have done their work for all time; but, at some period the desire arose to obtain more available space within the tower; and, in order to accomplish this, two members of each pier on each inner face under the great arches were cut off. This nearly proved the ruin of the whole building. The piers were seriously weakened by the removal of this outer casing (which had been done to a height of 30 ft.); leaving exposed on two surfaces of each pier the concrete core before referred to. There is, commencing at about 18 ft. from the ground, a zone of about 8 ft. in depth, where the mortar of these piers is of a less cohesive nature than elsewhere. As all the four piers at this height have this peculiar mortar, this portion may have been erected in the winter, when the action of frost, or continued rain, caused disintegration, or the perishing of the lime. It is certain that this weaker zone occurs; and in its depth in the north-east pier the crushing took place. The concrete was pulverised; the tower gradually leaned to the weakest corner, and eventually burst open, causing rents from the crowns of the northern and eastern arches, extending upwards through the outer arcade, the bell-chamber windows, and through the parapet. In examining this (the north-eastern) pier, a 10-ft. rod was passed, the greater portion of its length through this weaker part, diagonally and at upward angles into the largest fissure. Here was unmistakable evidence of the likelihood of the collapse of the tower; that it would be a question of time only, and that probably short: especially was this the case when considered in connexion with the fact that from some 200 tests applied at various points, it was evident there was a slow movement going on. These tests were broken again and again. It was determined to insert double shores and trusses to each arch of the tower, and triple trusses in the arches of the presbytery aisles. Measures were at once taken to effect this; and while they were proceeding (13th January, 1871), it was seen, from the further crushing of the north side of the presbytery, and the buckling and cracking up of the groining at the same place, that the tower was still sinking. Everything possible was done to avoid a catastrophe. Arches were hastily bricked up to resist the thrust; raking shores of heavy balks were inserted at every available point; yet the tests still broke, and the ceiling of Abbot Ramryge's chantry opened further. A cluster of heavy balks planted deep in the ground as raking shores from the north-east, bent as bows under the pressure; the north-east pier crumbled until there was a continuous shower of dust and small particles around it; sure and certain indication of a crushing up. At length, after many days' and nights' continuous labour, all of which time the workmen stuck bravely to their posts, it was ascertained that the downward progress of the tower was arrested, and that the great trusses in the northern and eastern arches were doing their work handsomely. They had caught the shifting mass, and were upholding it.

The repairs were after this systematically proceeded with. The foundations in the north presbytery aisle, next the tower pier, were found to have been injured by excavation for interments. A great mass of cement concrete, the whole width of the aisle, and of a depth down to the chalk, was here inserted, and well rammed down; then the missing members of the piers were carefully built, one pier only being done at a time. The materials used were hard bricks in cement, with hard York self-faced landings in long lengths, inserted at frequent intervals. Iron ties were also freely used. These ties before being fixed were heated, and, while hot, steeped in oil to prevent corrosion. Such was the state of the north-east pier that at one particular place it was found necessary to take out the old work to a depth of 7 ft. into the pier, then presenting the appearance of a large cavern. All the old work was well saturated with water, and at every two layers of brickwork, liquid cement grout was used in abundance, completely filling up every crevice. This method of repair was continued, wherever necessary, throughout the whole height of the tower. On the northern and eastern faces a considerable number of York bondstones were used across the rents, and the whole grouted. The walls of the entire structure thus became, as far as possible, once again a solid mass. At four stages, viz., at the triforium, the clearstory, the ringing-floor, and the bell-chamber, a system of strong iron bolts was inserted, passing in every instance through holes specially bored through the walls; the heads of the bolts pulling against massive iron flanges, with triple lead washers. These thirty-two bolts were drawn together with sixteen right and left handed nuts, screwed up by gangs of men simultaneously.

New outer stone arches and oak louvres were fixed to the tower windows, and the upper stringcourse renewed in Chilmark stone, a durable material, taking the place of the perishable clunch or Totternhoe stone used originally. In repairing the walls of the tower externally, it became necessary to remove the greater portion of its coat of plastering, and much controversy arose as to whether this feature should be maintained, or the Roman tiles left exposed and pointed. Many were the arguments *pro* and *con*. After some delay the question of plastering *versus* pointing was set at rest by a verdict in favour of the latter, and the success was such that there cannot now be two opinions as to the wisdom of the decision. Every angle of the structure is now exposed to view, the Roman tiles are acquiring a weathered tint pleasing to the eye, and the vast pile presents, owing to the unity of character of design and material, a unique appearance of rugged grandeur.

Internally, the tower floors had become rotten and unsafe; many of the main chestnut timbers were much decayed. The bells hung, with broken wheels, in a sadly neglected state, and their whole weight was concentrated on the weak north-east corner. The floor of the ringing-chamber was therefore renewed, as well as that of the bell-chamber. After repairing the beams and joists, and inserting new stone corbels, battens ploughed and tongued were put down, thereby rendering the tower more rigid. A new bell-frame was constructed and fixed in the south-west corner, and the whole peal received an entirely new set of fittings by Messrs. Warner & Sons, of Cripplegate. The 21st of December, 1871, was a day to be remembered by those fond of campanology, for then the College Youths rang out a glorious peal. Forty years had lapsed since the bells had been rung; none but the old and middle-aged had heard their sound, except when chimed.

In the presbytery the floor was concreted, and the historical monumental slabs relaid in the positions they originally occupied. The missing half-piers in the north and south arcades were replaced. The two openings, mentioned before as damaging to the tower, filled up, and the two

* See vol. xxix., p. 137.

ancient doorways in the first bays eastwards from the tower were re-opened and repaired, after having been closed and disused for two centuries and a half. Over the south doorway was erected the beautiful tabernacle work found behind the panelling some years ago. On the north side a similar structure has also been erected. Some blocks in the wall indicated that such had been there originally. The pinnacles and a finial of this structure were subsequently found embedded in the north screen of the Saints' Chapel. They differ in detail, however, from those on the opposite wall, although agreeing with them in general character.

In repairing the chantry of Abbot Ramryge, only the necessary work was done in order to make it secure; the mutilated details tell their own tale. The original incised slab of the Abbot was brought back, and refixed in its former place in the chantry. This had been smashed, and removed to the south presbytery aisle, thereby opening the grave of the Abbot, and giving facility for the interment of the family who appropriated the chapel.

THE GREAT EASTERN METROPOLITAN EXTENSION RAILWAY.

OPENING OF THE LINE TO LIVERPOOL STREET.

THE Great Eastern Metropolitan Extension Railway, which has been in course of construction for upwards of three years past, will be opened on Monday next to the main new terminal station at Liverpool-street; but for the present, and until the building of the large new station is completed, the suburban traffic is the only part of the general traffic of the company which will be sent over this extension. The extension lines are carried to Walthamstow, and the portions of the lines between that point and Norton Folgate, where the new low-level Bishopsgate station is situated, have already been for some months opened for traffic. Some portions of the work have been unusually heavy, especially those parts extending from the Bethnal-green Junction, and the final terminus in Liverpool-street, between which points the clearing away of property and the excavations have formed one of the heaviest portions of the undertaking. From Norton Folgate, in the direction of Bethnal-green, the line passes between deep retaining walls for a considerable distance, crossing in its progress under Commercial-street, by a cast-iron segmental skewed bridge.

The completing portion of the extension line to be opened on Monday next to Liverpool-street is a little more than half a mile in length, which passes entirely through a deep open cutting, until it enters the enormous station area of nine acres in extent. From the low-level Bishopsgate station the line passes under Bishopsgate-street, and thence under Worship-street by two archways on the skew, with two lines of rails laid in each. From this point it passes through the open cutting already named. It perhaps may here be stated, with a considerable degree of truth, that the immense demolition of property which the construction of the railway at this point involved, has conferred considerable advantages on the district, both on moral and sanitary grounds, by getting rid of the vast labyrinth of odious and fetid lanes and alleys,—hotbeds of fever and pestilence, and the abode of the most criminal and degraded classes, which formerly covered the area through which the railway is carried to Liverpool-street. During the excavations here several bones were found, one of which was an immense bone, supposed to have been that of a whale, which was found in a thick stratum of gravel. The largest portion of this bone was more than 2 ft. each way in its largest dimensions.

Shortly after emerging from the open cutting, the line passes under a stupendous iron girder bridge, carried across the railway at a considerable elevation, and carrying Primrose-street. This bridge, the roadway of which is now approaching completion, is undoubtedly one of the most striking engineering features connected with the works. It is an immense single-span girder, 190 ft. in length, supported and tied together by massive and lofty box girders, rising to a height of 14 ft. above the roadway, forming an unusually high parapet on each side, and closely resembling the sides of the London, Chatham, and Dover Company's bridge from Ludgate-hill to Blackfriars. On the main cross-girders of the bridge supporting the roadway are laid a series of iron arches, six of these arches, extending across the carriage-way, and one on each side about 1 ft. higher than the last-named for the footway. Over these iron arches a bed of concrete about 1 ft. in depth has been laid, and upon this wood pavement is to be laid down for the carriage-way, and asphalte pavement for the footpaths. In proof of the strong and substantial character of the structure, it may be stated that, when the scaffolding upon which the bridge was built was removed, a few weeks ago, there was not the slightest deflection. Immediately under the bridge a large signal-house has been erected on the railway level, which contains 100 levers. Proceeding in the direction of Liverpool-street, Skinner-street is carried over the line by another iron bridge, supported at each end by massive brick pillars, and in the centre by three iron columns resting upon a stone basement. Both bridges are constructed the full width of the other portions of the two streets.

The whole of the station area will be covered in from the last-named bridge to Liverpool-street, the entire length of the station from Skinner-street to Liverpool-street being upwards of 1,000 ft., with an average width of 290 ft.; thus occupying a superficial area of about 32,000 square yards. The platform levels at the station will be about 11 ft. below the level of the roadway at Liverpool-street, and access to them will be by easy inclines. Within the last three weeks the building of the new station has been vigorously proceeded with, and the works are intended to be pushed forward with all possible speed. Meanwhile a neat and commodious temporary station has been erected for the accommodation of the suburban traffic.

It may be remarked that the area of this suburban traffic is in itself one of considerable magnitude, and will necessarily bring an enormous number of passengers to and from Liverpool-street, which traffic has hitherto been limited to Shoreditch. It includes all the several districts of Homerton, Hackney, Stoke Newington, East Hornsey, Tottenham, Edmonton, Enfield, Buntingford, Hertford, Broxbourne, Cheshunt, Lea Bridge, Buckhurst Hill, Chingford, Walthamstow, Leightonstone, Snaresbrook, Woodford, Loughton, Epping, Stratford, Brentwood, Rowford, Ilford, and several other places in the surrounding districts.

The whole of the works have been designed and carried out under the superintendence of Mr. Edward Wilson, C.E., the contractors being Messrs. Lucas Brothers.

From the proceedings which took place at the half-yearly meeting of the Metropolitan Railway Company, held last week, it appears that new buildings on a rather extensive scale are about to be erected by the company in connexion with the extension line from Moorgate-street to Liverpool-street and Bishopsgate-street, now in progress. They include the erection of a hotel, with shops and offices at Moorgate-street, adjoining the Moorgate-street Station; and also the building of new offices and chambers over the new station about to be erected for Bishopsgate-street.

SANITARY AND INDUSTRIAL QUESTIONS AND THE GENERAL ELECTION.

THE last number of the *Builder* had not been many hours in the hands of our readers, when the political storm which we had ventured to predict burst in the thunder-clap of the announcement of a General Election. Throughout the length and breadth of the kingdom are now to be heard the din and bustle of preparation and of contest. Into the party questions it is not within our province to enter. But with regard to those great subjects of national importance, the sanitary and the industrial questions, we may be expected to give a word of advice.

The opportunity is offered to the earnest and thoughtful friends of health and of industry, to exert an influence that may tell throughout the entire course of the duration of the new Parliament. Candidates, supporters, and those useful persons who put ugly questions to candidates, at a time when all the amiability of hope invests them, may all do good service to the country by a little straightforward and energetic action. Let the points be put, as regards the political professions of those who seek for seats;—that sanitary questions, in the new Session, shall be argued on sanitary principles, and not made subservient to party politics; that industrial questions shall be treated on the broad principle of virtual equality before the law,—not on that of counting noses, or weighing sovereigns, but with the one common object of securing a working and practical state of the law. Months of debate may be saved to the country if these two primary principles of common sense can be established as accepted features of the programme of the new House of Commons.

THE AREA IN FRONT OF ST. PAUL'S AND THE NEW CHOIR SCHOOL.

THE intimation we were able to give as to the intended throwing open of the area in front of the cathedral last Monday, though the correctness of our statement was denied at the meeting of one public body in the City, was carried out to the letter. At the same time the corner-stone of the new Choir School, in connexion with the cathedral, situated at the back of the deanery, was laid by the Dean. The stone, which had formed part of the cathedral itself, bears the following inscription:—"Ad honorem Dei Omnipotentis et ad profectum sanctæ matris ecclesiæ lapidem hunc angularem domus in usum puerorum chorostasiæ Sancti Pauli Londinensis ædificandæ postridie Festi Conversionis Sancti Pauli MDCCCLXXIV., posuit R. W. Church, Decanus, adsistenibus fratribus, — Roberto Gregory, Canonico; Henrico P. Liddon, Canonico; Josepho P. Lightfoot, Canonico; Piers C. Claughton, Canonico; Alberto Barff, Magistro Puerorum; Francisco C. Penrose, Architecto."

REFORMATION OF LEICESTER SQUARE.

THE good news we were able to make known last week, a day before any other journal, was confirmed on the following day by the publication of Baron Grant's letter to the Board of Works. In this the writer adds to what we said:—

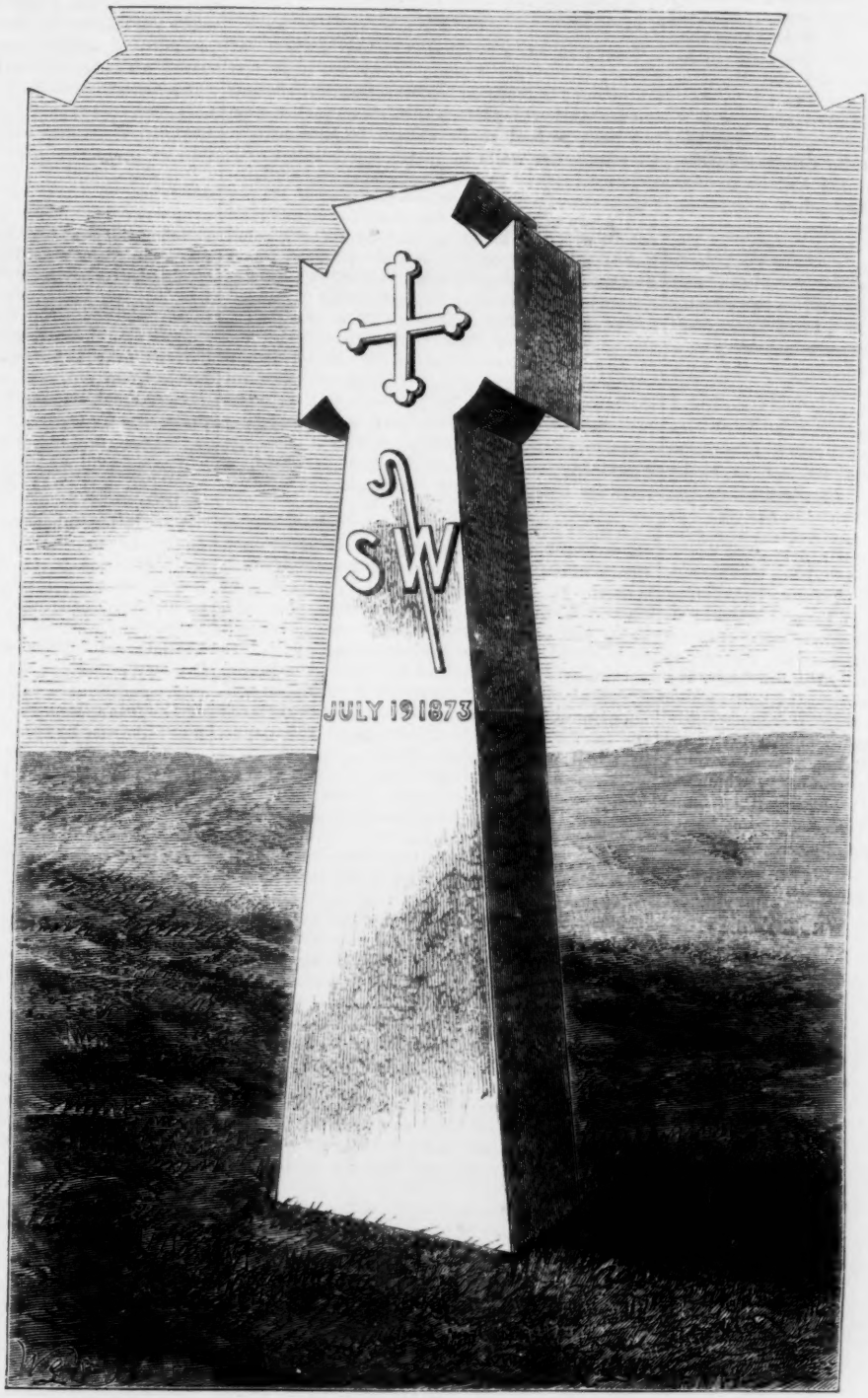
"In anticipation of final arrangements, I had plans prepared by my architect, Mr. J. Knowles, for laying out the grounds as a public garden, and these plans are being carried out by Mr. John Gibson, who, as the designer of the sub-tropical Gardens at Battersea, and other works, is favourably known; it is also my intention to enclose the square by a handsome railing, and in the centre to place an ornamental fountain, both specially designed for the purpose, and to provide seats for the public capable of accommodating about 200 persons."

The completion of the arrangements with the owners of certain rights in the square, depends on the passing of a Bill promoted by the Board of Works, in the progress of which a check has occurred. The daily papers say that opposition being raised before the Examiner of Standing Orders by the vestry of St. Anne, Soho, as owners of a seventh undivided share of the property, on the ground that they had not been properly served with notices, and that the Board intended to take land outside the railings, and now forming part of the public street, the Examiner decided that the Standing Orders had not been complied with, inasmuch as the Bill contemplated taking land not within the enclosure. This may possibly be got over by motion to suspend the orders. The vestry of St. Anne, *Westminster*, deny having anything to do with this.

Meanwhile, outsiders are inquiring whether persons employed to draw Bills have any excuse for not preparing them to meet the requirements of Standing Orders.

"ILLUMINATIONS."

ON the occasion of the recent Royal marriage, in St. Petersburg, Messrs. Defries & Sons had the appointment for carrying out the illuminations and decorations there. It was the first time that illuminations of crystal, with emblematic devices, ribbons, laurels, and mottoes, were introduced into that country, the Russian mode of illumination being merely small tumblers full of tallow, or what they call fat pots, and a few gaspipes pierced with holes. The English Embassy in St. Petersburg was a remarkably fine sight. The illuminations in London with naked gas on that occasion, were little else than despicable; the want of a proper supply of gas rendering the majority that we saw mere rags and tatters, without form or beauty of any kind. Either the gas company or the gasfitter is to blame in such cases, and should be punished. It is quite time it were clearly understood where the blame should really rest.



THE DEATH-PLACE OF THE LATE BISHOP OF WINCHESTER.

THE DEATH-PLACE OF THE LATE BISHOP OF WINCHESTER.

A CROSS of Cornish granite is just now in course of erection at Evershed's Rough, by Mr. Gilliam, of Dorking, to mark the spot where the lamented Bishop Wilberforce was thrown from his horse and killed in July last. The Bishop was on his way with Lord Granville, it will be remembered, from Leatherhead to Holmebury, and the site of the disaster is not far from Dorking.

A mass of concrete 10 ft. square and 5 ft. in depth, forms the foundation, and the monument is let into this to the extent of 3 ft., standing 10 ft. out of the ground. The monolith is 2 ft. 8 in. wide at the bottom, and 1 ft. 6 in. thick, and has on the head of it a floriated cross, with the initials S. W., traversed by a bishop's staff, below, and the date, July 19, 1873, all projecting from the face of the monument. It was designed by one of the Bishop's family, and was supplied by Mr. C. M. Manuelle, of Fenchurch-street; costing about 40*l.* independently of the foundation and setting up.

PUBLIC WORKS IN GREECE.

OF late considerable progress has been made in Greece, and many long-talked of schemes of improvement are about to be realised, while numerous important undertakings have already practically been set on foot. Of great importance amongst such undertakings is the scheme of cutting a canal through the Isthmus of Corinth, which has been much discussed as a panacea which, by opening a transit trade, may restore prosperity to Greek navigation. The scheme also involves the construction of docks in the canal, and a town and warehouses on its banks. In order to carry out the work, it is proposed to use a new excavating machine, invented by M. Vaudevinne, and it is expected that by this means the work can be accomplished in a short period of time. The breadth of the Isthmus, in the part where ships were drawn across in ancient times, is stated to be only three miles and a half. The canal is to be 40 mètres wide, and 8½ mètres deep. The promoter only asks for the concession of 5,000 acres of land on each side of the canal. The principal object of the enterprise is to establish a port of transit to rival Syra and Constantinople, and to form a new centre for Greek carrying trade in the Levant. One of the principal impediments to Grecian progress has been the want of roads, and without these the construction of railways,—a work which is actively pushed forward,—will not have much effect upon the material prospects of the country. A considerable sum of money has been annually disbursed by the State for the last forty years for the purpose of making roads, but very few have ever been constructed, and the number of really practicable roads in the country is ridiculously small. Railway enterprise, however, is most active. Three important new lines of railway are to be constructed. The first is to run from Athens through Thebes and Livadia to Lamia, near the frontier, a distance of about 140 miles, and thus when connected with the Turkish lines bring Greece into railway communication with the rest of Europe. The Government provides the land for the construction of the line, and also pays a sum of 15,000,000 frs. If the net earnings of the line exceed 7 per cent.,

he Government is to be reimbursed at the rate of 2½ per cent. yearly on the sum advanced, until the entire amount is paid off. It is said that the construction of the new line presents little difficulty, and that its cost will be about a million sterling. The second line to be constructed will start from the Piræus, and will pass through Eleusis and Megara, and across the isthmus to Corinth; thence to Vostizza, Patras, and Rhion. There the trains will be carried across the Antirhion on the other side of the gulf of Corinth, whence the line will proceed to Missolonghi and Vonizta, and terminate at the gulf of Arta. One of the objects of the line is to compete for the Indian traffic, and if it had been started from Porto Raphti, on the Ægean Sea, as was first contemplated, the journey from London to Alexandria would have been very considerably shortened. According to the convention concluded for the line, the Government has the option of guaranteeing an interest of 6 per cent. on an estimated cost of 120,000 francs per kilomètre, or of paying the sum of 18,000,000 francs, in which case this amount is to be reimbursed at the rate of 2½ per cent. on the amount yearly, supposing that the net earnings of the railway exceed 6 per cent. The concession for both lines is for ninety-nine years, and they must be completed within three years and a half from the end of June, 1873. The third railway concession has been granted to an English firm, and is for the construction of seven important lines in the Peloponnesus. As soon as the convention is ratified by the Chamber, the constructing company is to deposit 5,000*l.*, which will be returned immediately 30 kilomètres of railway have been completed. The land required for the construction of the line, and for stations, &c., is granted free to the company, which has the right to all minerals found within 5,000 mètres on each side of the line, paying to the Government 10 per cent. upon the profits derivable therefrom.

MR. COLE AND MR. LOWE.

AT the Kidderminster School of Art on the 23rd inst., Mr. Henry Cole distributed the prizes to the successful students. At the invitation of the committee he examined the state of science and art instruction in Kidderminster. He advocated the erection of suitable premises for classes to be taught chemistry and other sciences, including music; and for the School of Art also galleries to exhibit pictures, and a technical museum illustrative of the history and processes of carpet manufacture. He expressed the opinion that it was the duty of the Government to make building grants to the extent, at least, of one-third of their cost, to give liberal aid in providing objects and making loans. He thought the provinces would never be fairly treated until the British Museum, the National Gallery, &c., were placed under a responsible Minister in Parliament, like the South Kensington Museum. He said,—"The South Kensington Museum has been as my child, to which I have devoted days and nights of more than twenty years. Without undue self-conceit, I think I may say it has been a real and useful success. It has set an example which has been copied by thirty-five new museums in Europe. Some weeks ago I had to defend its present constitution, on which the life of the Museum depends, and I was provoked to make observations on a late political chief. I omitted to say that during his connexion with the Museum as vice-president he had shown me uniform kindness, had taken a cordial interest in the working of the Institution, and had on all occasions been its champion; but had lately become its opponent, and seriously endangered the independent existence of that Museum, for which I would lay down my life. These observations have caused regret to my best friends. I must have been wrong in making them, and I regret having done so."

ORNAMENTAL GROUNDS, SOUTHPORT.

AT a meeting of the Southport Town Council, held last week, it was decided that the designs submitted by Messrs. Maxwell & Tuke, of Bury, for laying out the grounds in front of the town-hall and Cambridge Hall, and erecting new fountain and other embellishments, at an estimated cost of 1,800*l.*, should be adopted. These ornamental grounds will extend from Trinity Churchyard to East Bank-street, and will be a great addition to the beauty of the centre of the town.

ARSENIC IN THE ATMOSPHERE OF ROOMS.

THE danger attending the application of colours containing arsenic in rooms, says the *Zeitschrift für Biologie*, has been long known, and the sickening of persons inhabiting such spaces has been proved to be caused by that poison. In rooms the walls of which are painted with green colours or papered with hangings containing arsenic, a dust in which particles of copper and arsenic have been detected, has been found on furniture and floor, which on being inhaled has caused disease. But it has also been found by experience, that in rooms containing deleterious colours, poisoning by arsenic has appeared under circumstances where a dissemination of the arsenic was thought not possible on account of the dampness of the walls, and a firmer adhesion of the colours, without, however, on the other hand, obtaining a clear insight into the process of poisoning. With a view of elucidating whether, and under what conditions, wall-coatings containing arsenic develop arsenical gases, a German chemist, Herr H. Fleck, has made a number of experiments.

A glass bell of 5 litres contents, with a bottle-shaped neck, was covered inside with paper upon which a coating of Schweinfurt green (which consists of 31·29 per cent. of peroxide of copper, 58·65 per cent. of arsenious acid, and 10·06 per cent. of acetic acid, besides a small quantity of free arsenious acid) was applied to a thickness containing on a surface of a square mètre about 15 milligrammes of arsenious acid (in combination). Paste made of potato starch served for binding the colour with the paper. The bell was firmly closed by a glass plate, and provided at the top with a cork penetrated by two glass tubes, one reaching to the bottom of the bell, the other ending underneath the cork. A strip of litmus paper, for observing the reaction, was fastened to the cork.

A second glass bottle was rinsed with a warm mixture of best gelatine and Schweinfurt green, the bottom and sides being covered with a layer of equal thickness all over, and then hermetically closed, like the bottle of the first experiment, by a cork provided with glass tubes and litmus paper.

Under a third glass bell a china basin, containing a thick paste of Schweinfurt green and distilled water was put, the bell being closed, as in experiment No. 1.

For a fourth experiment, a china basin, containing a paste of arsenious acid and distilled water, was placed under a bell of two litres contents, the latter being closed, as in the other experiments.

The temperature of the room in which the experiments were carried on was kept between 17·5° and 18° C. The litmus paper showed in the experiments Nos. 1 and 2, a reddening, extending from the lower end upwards, after the lapse of three days; while in experiment No. 3 the same change of colour took place after twenty-four hours; and in experiment No. 4, already after six hours, the red colour in the two latter cases being very intense and lasting;—in experiments Nos. 1 and 2, on the contrary, changing back to blue or violet, and then after a few days again to red. This change of colour of the litmus paper was a recurring one in the vessels Nos. 1 and 2, covered with organic mediums, and had not ceased after a period of three weeks; while in the vessels Nos. 3 and 4, containing no organic substances, the reddening of the litmus paper was lasting.

In the bell No. 1, with an inside covering of starch, paste, and paper, formations of mould between paper and glass soon showed themselves,—a phenomenon contradicting the assertion made by many that the presence of arsenic prevents the formation of mould. The gases contained in the vessels were then tried for arsenic. Bell No. 1 showed a most decided reaction after three weeks; the same was the case with bottle No. 2. Bell No. 3 showed a distinct, though weak, arsenic reaction after eight days; while bell No. 4 produced no reaction.

It follows, therefore, from these experiments that the air of damp rooms—the walls of which are covered with Schweinfurt green, even if no disturbance of dust takes place,—may contain arsenic.

Herr Fleck next tried to find the form of chemical combination of the arsenic here present. The experiments showed that arseniuretted hydrogen gas was contained in bell No. 1, and in vessel No. 2. Bells Nos. 3 and 4, which had reddened the litmus paper, showed,—No. 3, besides arseniuretted hydrogen, acetic acid; while the reddening in No. 4 was caused by the presence of sulphurous acid, which had been mixed with arsenious acid.

An experiment was then made with arsenious acid and an organic medium, paste of wheaten starch. These two substances were mixed and left, as in former experiments, in a glass bell. After standing during four weeks, without being disturbed, the mixture was thickly covered all over with a mouldy fungus, and the vegetation showing itself at the upper edge of the mixture, near the glass side, was surrounded by a dark circle of crystalline metallic arsenic. A reduction of the arsenious acid had consequently taken place in the process of growth of the fungus mould,—atmospheric air conducted in a current over the mixture containing arseniuretted hydrogen, but no arsenious acid.

Herr Fleck also made a number of special experiments for ascertaining whether in air, which is stagnant and not disturbed, over a mixture of arsenious acid and starch-paste, arseniuretted hydrogen gas was formed. The result was positive.

The latter phenomenon leaves no further doubt as to the presence of arseniuretted hydrogen gas in the air of a room in which Schweinfurt green is used as a coating for walls or for paper-hangings, and confirms the supposition that arsenic, in its dust-like mechanical admixture to the atmosphere of rooms, is not the only poisonous agent, but that arseniuretted hydrogen diffused as gas, a decomposed product of the free arsenious acid in Schweinfurt green, must likewise be regarded as the cause of chronic arsenic poisoning. The experiments made further prove that the development of arseniuretted hydrogen gas takes place in a predominant manner concurrently with dampness in rooms and in the presence of organic matter, and principally of organic mediums.

LAND RECLAMATION.

IF he is a benefactor to the human race that makes two blades of grass grow where only one grew before, so, *a fortiori*, must they be benefactors who enlarge the space upon which the grass may be grown. Although the cultivable and productive area of the islands that constitute the United Kingdom can only be extended within absolute limits, it seems indisputable that these limits have not been nearly reached as yet. Much has been accomplished in England in the way of land reclamation since the times now long past, when extensive tracts on the banks of the Thames, that are now verdant meadows, fruitful market-gardens, or that are covered with buildings, and form part of the great metropolis, were only parts of a great irregular lagoon, extending from Gravesend to above London. Much was done by Cornelius Vermuyden, the enterprising Dutchman, in draining the fens of Lincoln, but much still remains to be done in the same direction. The maps and geography-books of a future day—not very far distant it may be—may need other such changes as the obliteration of Whittlesea Mere and Rye Mere, once pretty lakes, now converted into meadows and corn-land. There are portions of bays on the coast of Great Britain capable of being converted, with comparative ease, into dry land, and many sand-banks and swampy estuaries and shores, in parts of both England and Ireland, that may be drained and reclaimed. In Holland the Zuyder Zee of Vermuyden's plodding countrymen has long ceased to be "deep" or "rolling," as represented in the bibulous glee in which Mynheer Van Dunck figures so prominently; and it is probable that a future Cuyp may find abundant studies of cattle upon the space now covered by its shallow waters.

Land reclamation is a healthy direction for speculative enterprise to take, and it may be expected that considerable results, valuable and permanent, are in course of realisation, or in prospect, in this direction. In last session of Parliament powers were given for the reclamation of a part of Pegwell-bay, on the north-east coast of Kent. In that locality,—and in others, indeed,—natural agencies invite by their action the co-operation of artificial means for the conversion of shallow waters and marsh lands into productive fields and meadows, a conversion that may be aided, but cannot be completely effected by natural action.

In this session of Parliament there are three Bills for land reclamation. One of these, the

Ardmillan Reclamation Bill, relates to certain "slob" lands on the banks of Strangford Lough, in the county Down, on the north-east coast of Ireland. These lands, adjoining the manor of Ardmillan, are either under water, or subject to be covered by tidal waters, and hence incapable of cultivation in their present state. The object of the Bill is to construct embankments, catch-water drains and works, to reclaim the slobs, and to confer powers on the company to lease or sell the same. Strangford Lough has a large area with a narrow inlet from the Irish sea, and comparatively little of tidal difficulty will be encountered in the construction of the works. The estimated cost of the works is 7,970*l.*

The River Fergus Reclamation Bill is for precisely similar objects, and relates to extensive tracts on the eastern and western banks of the river Fergus, which debouches well inland into the capacious estuary of the Shannon in county Clare. The works in this case are of an extensive character, the estimate for their construction being 195,000*l.*

The Bolton-le-Sands, Warton, and Silverdale Reclamation Bill is promoted by the Warton Land Company, whose object is to purchase certain adjoining tracts of land in the neighbourhood of Hest Bank, Carnforth, Warton, Silverdale, and Arnside, all on the shores of Morecambe Bay. The promoters of this Bill have an encouraging precedent in the success that has attended reclamation works in the same locality. An incidental result of the execution of the spirited project of Messrs. Brogden & Sons, in constructing a railway across Ulverston Sands, has been the reclamation of more than 3,000 acres of land that is worth now from 60*l.* to 70*l.* an acre. Messrs. Brunlees & McKerrow, who have had great experience in reclamation works, estimate the cost at 105,000*l.* They embrace a foreshore embankment of seven miles in length, which consists of a half-tide wall, or "toe," and an outer embankment. There is also a cross embankment, and works in sluices and drainage of the Keer. The principal embankment is from Arnside Point in Westmoreland, to a point near Hest Bank, Lancashire. Nearly five miles of the embankment are in a straight line. The quantity of land capable of reclamation by the works is about 10,000 acres. For the formation of the embankments the enormous accumulations of slag from the Carnforth and other furnaces in the neighbourhood will be available and excellent material.

Other reclamations on an extensive scale may be expected soon in the Solway Firth, always provided that the landlords on the opposite banks can mutually agree to a plan for the construction of the weirs necessary. Already the receding tides have made considerable progress with the works, in connexion with the Solway Junction railway, which crosses the estuary by embankments running well in from the shore at each end, and an open viaduct in the middle. The sand and alluvial matter that have silted up behind the embankments is already 10 ft. deep on the inner side of one, and 8 ft. deep behind the other. Direction having been thus given to the scour, will make the gradual construction of additional weirs, and the reclamation of many thousands of acres of valuable fertile land, a comparatively easy and inexpensive process.

It is better to invest money in endeavours to increase the prosperity of the country than to lend it to foreign countries to enable them to prepare for assaults on the prosperity of England.

KEMP AND THE SCOTT MONUMENT.

THE Scott Monument at Edinburgh is about to be fully completed. The foundation-stone was laid on the 15th of August, 1840, and the building was finished in 1844. One part of the work still remained to be executed. In each front of the monument above the principal arch are six small niches, making a total of twenty-four in the main structure, besides thirty-two others in the piers and abutment towers. These niches were designed to be occupied by sculptural impersonations of the historical and fictional characters portrayed in the writings of Scott. The work of filling these niches went on very slowly, until about three years ago a vigorous determination seized the minds of the citizens to put the finishing touch to the memorial of one of whom they are justly proud. Twenty-three niches remained to be filled, and the sculptors,—Messrs. Brodie, Hutchison, Stanton, Lawson, Currie, and Mrs. D. O. Hill,—were commissioned to undertake the task. These statues, which are almost life-size, and chiselled out of what is called Binny Quarry stone, a hard and durable freestone, are being exhibited in the National Gallery, Edinburgh, previously to being placed in position. It may therefore be opportune to record certain passages in the life, little known except to those who knew him well, of the architect and builder of the monument, George Meikle Kemp. Kemp was born in the district which has been truthfully painted by Allan Ramsay in his "Gentle Shepherd," which, for all the poet barber said and sung of it, is neither picturesque nor romantic. The romantic and beautiful glen of Roslin was not far away with its strong-walled castle, and its remarkable chapel. Thither, when ten years of age, went Kemp on an errand, and from the moment he beheld the venerable ruins, he became at heart an architect and an antiquary. When old enough he was apprenticed to a joiner, and when the time of his service had expired, he made his way to Galashiels, and there worked for a year as a millwright. While at Galashiels he had frequent opportunities of inspecting the remains of the abbeys of Melrose, Dryburgh, Jedburgh, and Kelso, perhaps the richest specimens of ancient cathedral architecture which Scotland contains. There is a little incident connected with Kemp's journey from Edinburgh to Galashiels which has not heretofore appeared in print. He set out from the city on a bright Saturday morning of July, 1812. He had saved a little money, and was resolved on a fortnight's holiday before commencing his journeyman life. His luggage, which was not over heavy, had been given in charge of the carrier: the only burden that Kemp bore was his sketch-book. He trudged merrily along, reciting passages from his favourite poets. Even as a youth he was well acquainted with Chaucer and Sir David Lindsay, and the poems of Burns he could repeat by heart. When he had left Edinburgh some twelve miles behind, and was gazing in rapture on the ponderous ruins of Borthwick Castle, a post-chaise overtook him, the only occupant of which was a middle-aged gentleman, who asked him whence he came and whither he was going, and being informed on both points, proposed that Kemp should take "a lift" in the chaise. Kemp willingly agreed, and as they rolled along showed his travelling companion the few sketches he had, and told him the story of his previous life. The gentleman entered freely into the conversation, and talked and told so much to the youth about old ruins of abbeys and castles, old ballads and old songs, that he felt as if under the spell of an enchanter. Many years after Kemp discovered that the fascinating middle-aged gentleman was Walter Scott, who was on one of his many journeys from Edinburgh to superintend the erection of the would-be baronial mansion of Abbotsford. Twelve years after this encounter Kemp started on a Continental tour, which extended from Boulogne to Abbeville, Beauvais, and Paris, halting at each place for a few weeks, and studying their architectural remains during the leisure hours of his employment as an ordinary joiner. "After two years' travel of this kind," writes a friend, "he returned to Edinburgh, commenced business as a joiner, but was unsuccessful. His hand, indeed, was at this time more conversant with the pencil than with the axe or saw; and he was busy in the study of drawing and perspective, in which he soon became a proficient, without the aid of a master. Having been unsuccessful in business as a master-joiner, he returned to his former situation as a journeyman, to which he added the employment of an architectural draughtsman; and such was the superior beauty and correctness of his drawings that they soon found purchasers." At this time he was taken in hand by Mr. Burn, the well-known architect, and made, it may be said, his first entry on the path he wished to tread. He was one of the fifty-four who sent in plans to the head-quarters in Edinburgh of the committee of subscribers to the Scott Monument, of which plans there were twenty-two Gothic structures, eleven statues combined with architectural accompaniments, fourteen Grecian temples, five pillars, one obelisk, and one fountain. The three best were selected for a prize of 50*l.* a piece. Of these three two were by eminent English architects, and the third by John Monro. Monro was the architect and builder of Melrose Abbey, and many others of what are now ecclesiastical remains in Scotland. This pseudonym was suggested to Kemp by the Rev. J. S. Mimes, the author of several works on art, especially sculpture. Kemp, when the three prize-men competed among themselves, was successful, and, as architect, builder, and clerk of the works combined, set vigorously about the erection of the monument. For four years he saw his Gothic spire rising, when on a foggy night, the 6th of March, 1844, while returning home from a visit to some quarries in the vicinity of Edinburgh, he lost his way, and fell into the canal, whence his body was not recovered for three days. The news of his death cast a gloom over Edinburgh. It was intended to inter his remains in the vault under the Scott Monument, and a stone coffin had been built to receive the wooden one containing the body, with a tablet simply recording the name and date of the architect's death, but at the last moment it was ascertained that the committee had not the power to entertain such a proposal. The remains of Kemp were interred in the West Church burying-ground. The magistrates of the city, and several other public bodies, together with the committee of the monument, as well as the members of the Royal Scottish Academy, accompanied the procession, which numbered about 1,000 individuals. The streets were densely lined with spectators, and tears even were shed by many as the mournful *cortége* passed.

THE DRAINAGE OF GLASGOW.*

MR. HONEYMAN has reprinted a paper read so long ago as 1858 at a meeting of the Glasgow Architectural Society, but which he maintains is still "as good as new," since "absolutely nothing has been done to remove the palpable and admitted defects" of the present system of sewerage at Glasgow.

In a summary the author says:—

"I have endeavoured to show what, in my opinion, is necessary for the efficient drainage of Glasgow, or, I may add, any other town—namely, first of all, well-constructed sewers, both as to form, size, and gradient; secondly, clean sewers and the disinfection of the sewage by means of a continual system of flushing, so that putrefaction and the consequent evolution of noxious gases in the sewers may be prevented; and thirdly, well-ventilated sewers, so that in the event of injurious exhalations rising from the sewage they may be disposed of in such a way as not to be obnoxious to health; and I submit that if such a system were in operation it would practically be of no consequence what manner of filth the sewers contained. It would all be speedily got rid of, and without being permitted to affect our comfort in any degree whatever. There can, therefore, be no excuse for abandoning our water-closet system, except the introduction of some apparatus superior in cleanliness and convenience.

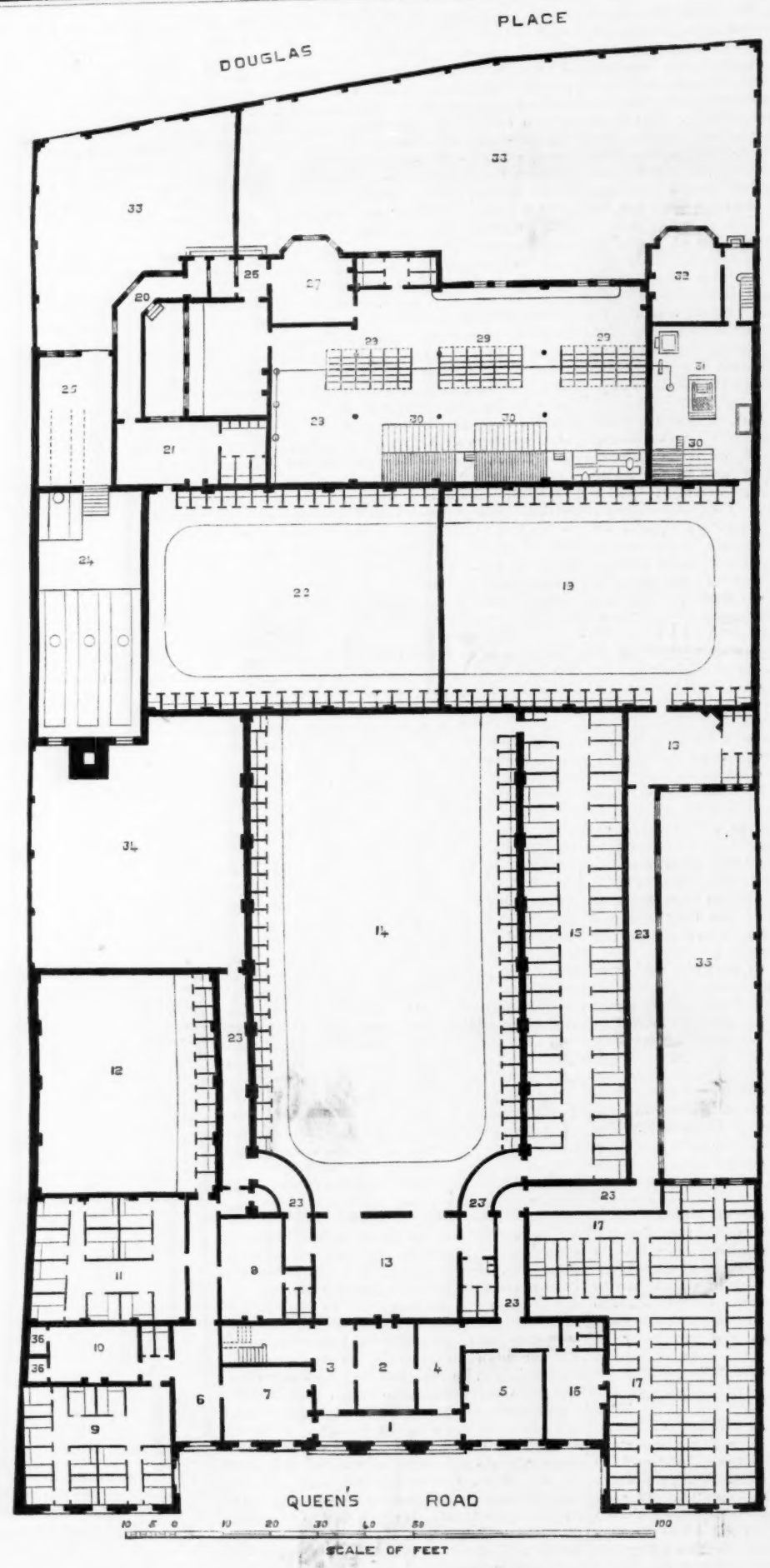
And now, gentlemen, you may, perhaps, be surprised that I have not alluded more particularly to the purification of the river, and the utilisation of the sewage. I intended to do so when I commenced this essay, but find that I have already exceeded my proper limits. But the sum and substance of what I intended to say on this subject is simply this,—that I believe it has received a great deal more attention than it deserves, and that it is of very secondary importance compared with the efficient drainage of the city. I do not for a moment deny that if the sewage were intercepted and conveyed to the Ayrshire coast, or distributed over the adjacent pastures, a very great improvement would be effected upon the condition of the river, and one which no citizen of Glasgow would fail to appreciate; but I certainly do deny that this would of itself affect the sanitary condition of the city in any perceptible degree. I cannot help thinking that those who have devoted so much attention to this part of the subject proceed on a totally erroneous opinion of its importance. They speak, for instance, of the river 'endangering the health of about half a million of human beings;' whereas it must be obvious that the injurious influence of the river can only extend to one or two thousands of the inhabitants; and, in fact, it remains still to be proved that such evil influence exists at all."

There is one point amongst others to which we would wish here more particularly to draw attention. Mr. Honeyman says, in the preface:—

"The only part of sewage which acts injuriously on the health being the gaseous or volatile part, we can protect ourselves from that effectually, with ease and without great cost, and by doing so we get quit of the whole sewage difficulty, *so far as it is a sanitary difficulty*. This being so, it is evident that the importance of the more or less purely economical question—how are we to intercept or dispose of the sewage?—although actually great, is relatively insignificant."

The italics are Mr. Honeyman's own. Now it so happens that the subject of most interest of late, in a sanitary view, as respects sewage, is its relationship to typhoid fever; and it is well known that it is *not* so much "the gaseous or volatile part" of the sewage in any special sense, with which we have to deal in that "sanitary difficulty," as with the impregnation of water by sewage itself, and especially by the excreta from typhoid patients, particularly in water supply from wells.

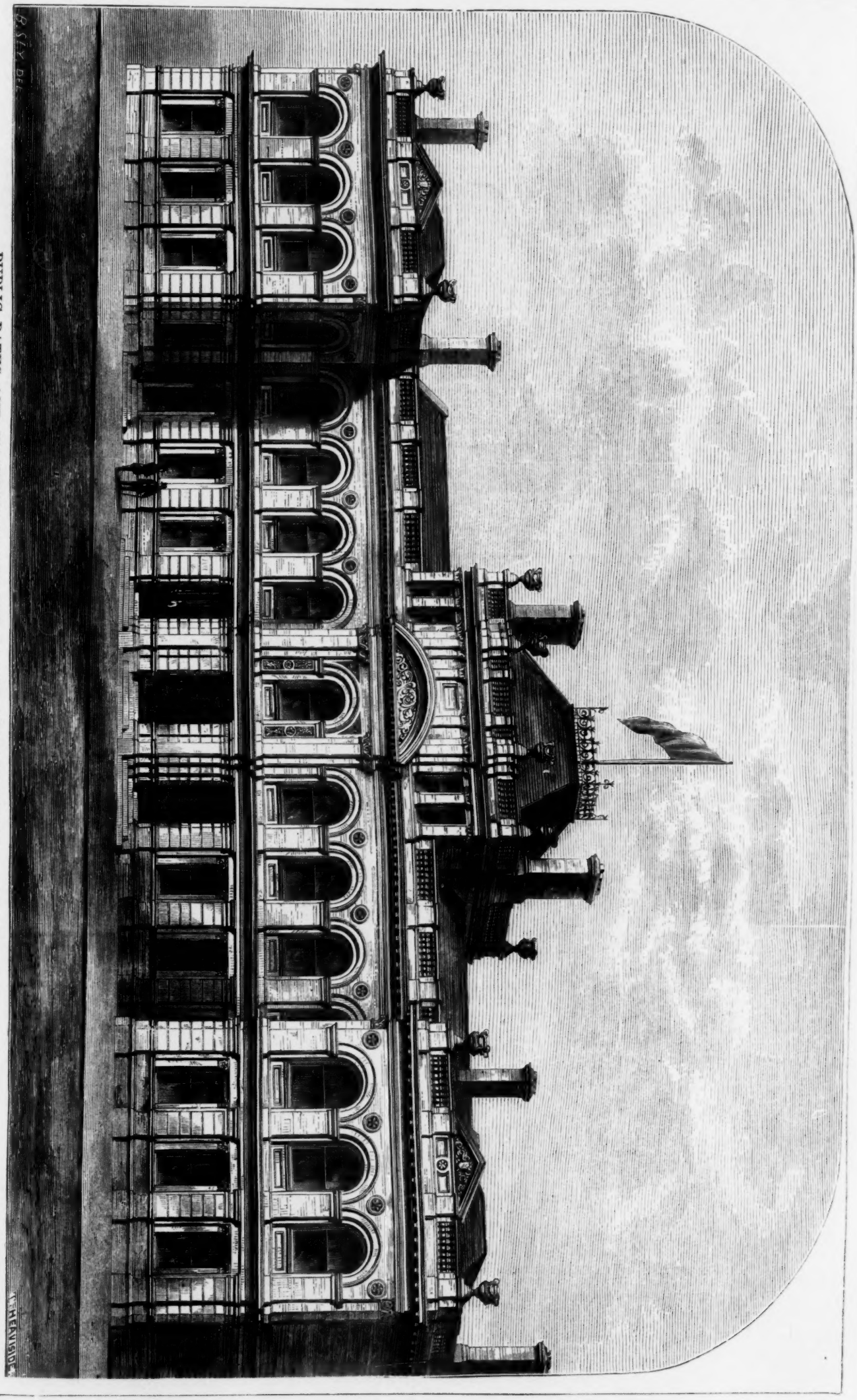
* On the Drainage of Glasgow, with Special Reference to the Disinfection of Sewage, the Ventilation of Sewers, and the Trapping of House-drains. By John Honeyman, Architect. Glasgow: Macnab. 1873.



GROUND PLAN

1. Vestibule.
2. Ticket-office.
3. First-class entrance.
4. Second-class entrance.
5. Superintendent's office.
6. Women's entrance.
7. Shampooing-room.
8. Women's second-class waiting-room.
9. Women's second-class private baths.
10. Women's first-class waiting-room.
11. Women's first-class private baths.
12. Ladies' swimming-bath.
13. Men's first-class waiting-room.
14. Men's first-class swimming-bath.
15. Men's first-class private baths.
16. Men's second-class waiting-room.
17. Men's second-class private baths.
18. Men's second-class waiting-room.
19. Men's second-class swimming-bath.
20. Third-class entrance.
21. Men's third-class waiting-room.
22. Men's third-class swimming-bath.
23. Corridor.
24. Boiler-house.
25. Engineer's shop.
26. Lobby.
27. Waiting-room.
28. Washhouse.
29. Washing-trays.
30. Drying-closets.
31. House laundry.
32. Engineer's living-room.
33. Yard.
34. Space available for Turkish baths.
35. Space available for gymnasium.
36. Closets.

PADDINGTON BATHS AND WASHHOUSES.——*Plan of Ground Floor.*



PUBLIC BATHS AND WASHHOUSES FOR THE PARISH OF PADDINGTON.—MR. LEWIS H. ISAACS, ARCHITECT.

PUBLIC BATHS AND WASHHOUSES FOR THE PARISH OF PADDINGTON.

IN the month of July, 1872, the Commissioners appointed to carry out the Act for the Erection of Baths and Washhouses for the Parish of Paddington, invited nine architects to submit designs for the proposed building.

Eight sets of drawings, to which we referred at the time,* were received in response to the invitation, and of these the first premium was awarded to the design forming the subject of our illustrations.

The building occupies an area of ground lying between Queen's-road and Douglas-place, Bayswater, having a frontage of 150 ft., by a maximum depth of 250 ft. The front external wall, next the Queen's-road, is set back 12 ft., to meet the requirements of the Building Act, in respect to the line of street frontage.

The entrance to the first and second class swimming-baths, to the private baths, and to the ladies' swimming-bath is in the Queen's-road. The third-class swimming-bath and the washhouse are approached from Douglas-place. Space is reserved on the ground-floor for Turkish or hot-air baths, and for a gymnasium, should their erection at any future time be determined on.

The keynote of the design is the position of the men's first-class swimming-bath. As it is the largest and most important of the various departments into which the establishment is divided, it occupies, so to speak, the place of honour,—the centre of the site,—the other buildings being grouped in respect to the same in such positions as their relative importance and uses would suggest.

This bath is 90 ft. long by 40 ft. wide, and will hold, when filled, 100,000 gallons of water. It will be provided with fifty boxes for bathers, and will have a spring-board at its eastern end, and an ornamental fountain at its other extremity.

The men's second and third class swimming-baths are placed in the rear of the first-class swimming-bath, end to end, and are each 70 ft. long by 30 ft. wide, provided with forty boxes for bathers.

The ladies' swimming-bath is 45 ft. long by 36 ft. wide, and is fitted up with a dozen dressing-boxes. Each class of bathers is provided with a separate waiting-room, with the necessary water-closet and other accommodation. The whole of the swimming-baths are lighted from the roof.

The private baths are in square compartments; made of slate, the first class being 7 ft. long by 6 ft. wide; the second class being 6 ft. square. It is proposed to enamel the slate partitions dividing the first-class baths, but simply to oil those of the second class. The first-class baths will be made of porcelain, the second of copper japanned.

The washhouse is 75 ft. long by 40 ft. wide, subdivided into groups of compartments, and immediately adjoining are the ironing-room and house laundry. A residence for the engineer in charge and a smith's shop are also provided. It should be noted that provision has been made to enable the engineer and other officials to proceed from the front to the rear of the establishment without going into the open air.

The first floor is devoted to a board-room, clerk's office, and superintendent's apartments; and the rooms on the second floor will be used as bed-rooms only.

The style of architecture adopted is Italian, the materials employed in the front elevation being white Suffolk bricks and Portland stone.

The whole of the works embraced in the buildings are being executed by Mr. Thomas Elkington, of Golden-lane, whose contract amounted to 22,595*l*. The boilers, machinery, hot and cold water pipes, laundry, and bath-fittings have been provided by Messrs. J. & F. May, engineers, of High Holborn. The carving in the front is the work of Mr. Almond. The architect's clerk of the works is Mr. James Abbott, and Mr. Rayment represents the contractor. The works are being executed under the personal superintendence of Mr. Lewis H. Isaacs, architect, of Verulam Buildings, Gray's Inn.

The buildings are rapidly approaching completion, and it is expected that the inhabitants of Paddington will be enabled to avail themselves of the many advantages this establishment will afford them, early in the present year.

* See vol. xxx., p. 1020.

THE NATIONAL IMPORTANCE OF LOCAL MUSEUMS OF SCIENCE AND ART.

ON the 21st instant, Mr. Henry Cole, C.B., as president of the Birmingham School of Art for the year, delivered an address in the Town-hall there. In the course of it he said:—Schools of science and art instruct chiefly the young, but museums can instruct both young and old. They illustrate the studies of youth if properly administered, and give lessons to manhood and old age which it will consent to receive in no other way. They are temples where all can worship in harmony; they teach good habits of order, and cleanliness, and politeness, and make every one feel that he has a possession in the commonwealth. Museums are antidotes to brutality and vice.

As the works of nature abound in every district, so every local museum should have a division representing the natural history of the district—every object so clearly labelled that a child of five years of age might understand it. Such a museum, too, should have its division of typical objects, illustrating chemistry and physics. If the museum be one of a manufacturing town, it ought to have a division affording useful illustrations of past and present works of industry special to it. All these divisions are comparatively easy to form.

The division of Fine Arts is not so easy. A top-lighted special gallery must be provided by the locality. It is indispensable for seeing pictures properly. Every district has pictures which can be borrowed, and it will obtain bequests; but it is not easy to obtain a supply of very fine pictures, or very fine objects of art, without co-operating with the State, even in a wealthy, populous town like Birmingham. There is not in the world an inexhaustible supply of Raffaelles, or Titians, or Vandykes, or Reynoldses, or Mulreadys, to be had even for money. You cannot get them as a permanent possession. But, if Birmingham will co-operate with the State, and not stand aloof as though it was in the time of the Heptarchy and part of Mercia, it can borrow them from one central museum at least, and in due time will be able to borrow them from other collections in the metropolis. And it is more useful for study that you should have a succession of fine pictures, rather than one permanent collection of a few, never changing. With pictures as with other things, variety is charming and attractive. Again, you cannot get an Elgin marble, or a *Venus di Milo*, but you can have what is quite as good for study, namely, casts of them. You cannot have the Queen's plate itself from Windsor, or the regalia from the Tower, or the Ghiberti gates from Florence, or the bronze doors from Hildesheim; but electrotypes give you them, and they hardly differ from the priceless and unobtainable originals.

It would be unprofitable to Birmingham and every large town to send its emissary over the world to try and get copies of such objects. And he would often be baffled in his attempts. But if you co-operate with the State you get them; and to induce you to have them, you get them at half the prime cost.

For its Museum of Science and Art the municipality must be responsible for all kinds of local management, suitable premises, cleanliness, order, &c.; and when these have been secured, the individual must do his part by paying the fee for entrance.

Because museums, I think, should have the co-operation of the individual in their maintenance. The cost of the museum must be defrayed somehow. Whatever may be said for free compulsory primary education, I think payment in all matters of secondary and technical education, which cannot and ought not to be made compulsory, should be paid for, in part at least, by the individual that uses the museum or school. The fee may be only 1d., but I advocate 1d. fee for everybody's admission. This principle of contribution has been successfully tried for eighteen months at the Nottingham Museum of Science and Art. The working expenses have been wholly met by it, and there is a balance at the bankers. The Museums Act enforces free admission; I think it ought to allow municipalities to make a charge. Such has been the success of the Nottingham Museum, that Nottingham Castle, which was burnt down in the Reform riots of 1830, is to be restored and made into a Midland Counties Museum—showing itself high above the plains as a beacon of progress and civilisation.

I will now attempt to place before you what I conceive to be the functions and organisation of parent or central museums. As they must be supported by taxation drawn from the whole country, I contend that they must be at the service of the whole country, which should derive all the benefit from them that is practicable. I repudiate altogether the notion that they are metropolitan institutions. They are no more metropolitan than the Court of Chancery is a metropolitan institution. As central stores they must be placed somewhere, and they are placed in the metropolis because, whilst serving the purposes of the whole country, they may also be consulted there by the greatest number of persons. Excepting very bulky objects, and works of art of the rarest and most exceptional character, I know of none which may not from time to time be circulated, under proper regulations, to populous places like Birmingham, Manchester, Liverpool, Leeds, Sheffield, Nottingham, Bristol, &c. Indeed, every place in the United Kingdom which makes proper accommodation should have its claims for loans of objects duly attended to. Since 1857 the South Kensington Museum has circulated, not only examples, books, &c., to any School of Art that has applied for them, but it has contributed to more than 130 local exhibitions, which have been visited by just 4,000,000 of persons, who have contributed above 86,000*l*.

Much more could have been done if other national collections had been made available for circulation, such as those of the British Museum and National Gallery. I say, advisedly, both these institutions are suffocated with a plethora of possessions which they cannot properly exhibit, and they will not allow the country to share in. And why? Because they are managed by irresponsible Boards, which Jeremy Bentham called "screens." Behind these Boards Parliament is unable to fix personal responsibility; and they defy all public wishes.

Having regard to popular demands, to the growing wealth and intelligence of the people, and to the exceeding profitableness of judicious investments in objects, especially of fine art, I will say, with all the force I can, that the public expenditure has been niggardly, imprudent, and impolitic. We have wasted millions, and failed to invest even thousands.

It is notorious that in late years the prices of works of fine art have increased, and are still increasing. Private collectors of works of art in this country, who have bought with caution and judgment, have made most profitable investments. In 1860, Mr. Henry Thomas Hope, a millionaire, informed a Committee of the House of Commons that he was willing to take the whole purchases of the Kensington Museum at the price which had been paid for them, adding to the price a handsome per-centage as profit. At the present time, I believe, the whole collections would fetch in the market double the amount paid for them, whilst some objects would realise ten times the sum paid for them.

In 1862, the national income was 69,000,000*l*. Notwithstanding large remissions of taxation it has increased to 76,000,000*l*. in 1873. In 1862, for purchases for the South Kensington Museum, being the only storehouse for circulation for the United Kingdom, Parliament voted for the purchase of works of science and art the sum of 16,800*l*.; whilst in 1873, when the revenue had increased so largely, and the demand for works of art as well, the amount for national investments in works of science and art has actually been reduced to 13,000*l*.

Sir Stafford Northcote, on one occasion, proved that the increase in the demand for decorative manufactures had augmented in greater proportion than for manufactures into which fine art did not enter. Political economy has hitherto had little effect in regulating wise and prudent investment. I wish Governments would believe in the Scriptures. They teach us that "there is that scattereth and yet increaseth, and there is that withholdeth and it tendeth to poverty." I wish they would also heed that account of the unprofitable steward, who hid his master's talent, and, for his mistake, was cast out where there was weeping and gnashing of teeth.

I think it would be justifiable and prudent that the constituencies should call upon Parliament to invest at least 100,000*l*. annually in judicious expenditure in the purchase of illustrations of science and art. It would be only the third of a penny in each pound sterling of national expenditure. It would not be very crippling to the administration of a Chancellor of the Exchequer to insist, "for every pound we give you as a tax on our beer, wine, and spirits,

you shall put aside and invest, not spend as upon gunpowder, a penny in works of science and art." The national debt would be paid off all the sooner.

The national museums of science, such as the natural history division of the British Museum, and the collections of mechanical science and inventions miscalled the Patent Museum, should be in alliance with all local museums and schools for science. They should collect the best models for teaching; they should form small typical collections of objects, to be lent or to be purchased. All superfluities should be circulated. So with works of fine art. All the national museums possessing works of fine art, especially the National Gallery, should circulate to local museums and schools of art all superfluities, and there are heaps of them. So heaped are the superfluous treasures at the British Museum, and hidden, that it has become, in the words of the modern Jeremiah, our great Carlyle, "little better than a continent of dung."

I have already said that original works of the highest art are hard to be obtained. For all purposes of general public instruction good copies serve equally well. Buy originals if you can; but there are some originals which cannot be bought, and of which copies ought to be made. A moderate annual expenditure would enable students of the schools of art to go abroad and copy such works as Titian's "Assumption of the Virgin," at Venice; Fra Beato's frescoes, at Florence; Giotto's frescoes, at Padua." This country ought to have two chronological series illustrating the art of painting of all countries and ages, one being for circulation, accompanied by a lecturer; and the making such copies, for the benefit of all local schools, should be the work of a branch of the Art Training School. The making copies of works of sculpture, by means of electrotyping and other methods, is comparatively easy. The only difficulty is to persuade the possessors to allow the copy to be made. Casts, thanks to Sir Stafford Northcote especially, have been brought even from the jungles of India; and for a very moderate sum you might have casts at Aston Hall which would teach what India and Indian art is better than writings and talkings for a thousand years.

At the Paris Exhibition of 1867, with a view of smoothing away difficulties in obtaining permission to make copies, the Prince of Wales interested himself in forming an international convention with the princes throughout Europe. France, Russia, Prussia, Hesse, Italy, Austria, Sweden and Norway, Saxony, Belgium, and Denmark, all joined it. It was a real holy alliance. Although the funds for reproductions have been too small to do much, copies of many important works have been obtained for the use of Birmingham and other places, and foundations have been laid for a wide action as soon as the wisdom of Parliament shall recognise the policy of entering upon it.

In concluding, the speaker said,—let me apply these general observations to Birmingham. Acting on the principles I have submitted to you, Birmingham, I hope, will possess fully-developed municipal institutions for promoting museums of science and art. The corporation already has begun the work. In the town there should be the picture and sculpture gallery, drawing its supplies from the National Gallery and British Museum; there should be the museum of industrial art, in connexion with the South Kensington Museum; there should be the School of Music in alliance with the National Training School of Music,—all these lighted up and open in the evening. In the suburbs should be a museum, being head-quarters of natural history, which wants great space, and it should derive all possible advantages from the stores and experience of the British Museum. That noble specimen of old English domestic architecture, Aston Hall, should be a sort of Hôtel de Cluny, and a loan museum for English furniture and architecture, to be collected from the midland counties. The Corporation will maintain the structures, the State should help with objects, and the people with their pence. Ought it not be the pride of Birmingham to possess in the highest perfection such instruments for educating and civilising its people?

Protection from Fire.—A number of tell-tale clocks are about to be placed in the Great Midland Hotel at St. Pancras, to ensure the attention of the watchmen. Mr. Smith, of Derby, is the maker of them.

HOUSES IN REFERENCE TO SANITARY AND ARTISTIC REQUIREMENTS.

AT the Belfast Architectural Association Dr. Henry MacCormac read a paper on this subject. After speaking of air, water, sewage, and light, he said, in clothing we bear, so to speak, a portable climate along with us; but no amount of coverings in these regions at least suffices without a fire. Fireplaces, however, as commonly constructed, are not sufficient. The hole in the wall does not adequately heat our houses, and the waste of fuel is extreme. A broad tile laid properly over the fire, I find, goes far to arrest the radiation upwards, radiating the heat, in fact, back; but, otherwise, the "hole" sends most of the heat up the chimney instead of into the room. Commonly the fire is burning and blazing to excess, or else it is half lighted, at once comfortless and miserable. Reflecting on the matter, I have myself devised a fireplace, partly founded on one introduced 200 years ago by Cardinal Polignac, described by Bernan & Edwards, and recently re-introduced by Captain Galton, with, however, important additions and modifications of my own. I laid the matter several years ago before Mr. Grissell, builder of the House of Commons, in the House of Commons itself, and some others as well. My fireplace economises fuel, warms the room, and promotes ventilation as well. Imagine an ordinary, or, preferably, a stove grate then advancing well into the apartment, coated or covered with majolica, porcelain, marble, or some less costly material, immediately over the commoner tiles which are next the fire. The bars are straight and low, while the back of the fireplace is of iron, but say copper as a much better conducting material. Behind the fire, and extending some way up the smoke-duct, is a hot chamber, which admits air by drains of sufficiently ample section from outside the house, which air, when heated, is discharged by valvular openings of equal section into the apartment. A door glazed with glass or talc, single or double, sliding on wheels or hinged, subsists before the fire. One of the fireplace jambs is made hollow up to the ceiling, and so arranged that the opening above shall be covered by the ornamental cornice, while the aperture in the hearth or fireplace below is managed in such wise as to supply, when the door or doors are closed, the fire with the deteriorated atmosphere of the chamber. When the fire-door, indeed, is closed, the heated air from the hot chamber behind the fire enters the room *pari passu* with the consumption of the fouled air derived from the ceiling of the room. In an ordinary open grate 40 cubic feet or so of air pass, it is calculated, each minute into the chimney, but in the fireplace which I have described twice or thrice the quantity, if desired and permitted, may, I calculate, be transmitted. The heated air, in other respects, may be suffered to escape at pleasure, either directly from the hot-air chamber or from tubes running along the base of the apartment. A fireplace of this description would meet, I submit, every artistic and economic requirement. It would at once secure ventilation, supply warmth, and show a cheerful fire, with results which no other grate ever yet has sufficed to realise.

Convenience assuredly ought to be studied in our mansions. No stair-step, for example, should have a rise of more than 5 in., while houses, as on the French or Scottish plan, might be constructed so as to yield ample accommodation on a single floor. No dwelling, either, should be erected (municipalities should see to it) that did not meet at least the elementary requirements of human health and dignity. In the very humblest dwelling there ought to be a decent kitchen, which might also be a living-room, with offices, a minimum of three bedrooms, one for the parents, the others for the youths and maidens of the family, with every adequate provision for heating, lighting, and ventilating. The ground-floor rafters must not be placed over the naked earth, but effectively severed from it, so that neither emanations from the soil, nor damp, nor the incursion of vermin should be so much as possible. The walls ought to be made quite impervious to moisture, and otherwise built so substantially as not to shake with the wind or tremble with the casual tread. A model should be erected, and builders and contractors constrained to come up to it. At the same time, all extant buildings, unfitted by reason of age or faultiness for proper use and occupancy, due notice being given, should undergo imperative reconstruction. But in any and every case the building must be rendered fireproof. It is, indeed, the antithesis of all convenience that people should be liable to be burnt alive. Frightful casualties are of incessant occurrence, casualties which are at once the opprobrium and the condemnation of existing modes of construction. Whatever be the style adopted, our towns ought to be rendered beautiful.

Green trees I would have growing in every thoroughfare, pictures hung in every dwelling, busts or statues recessed in every wall. In respect of sculpture and architecture, I greatly prefer the Italian style myself, with its balustrades, arcades, and campaniles; but I am free to confess that I have seen Italian structures or what were so misnamed, excessively ugly, and structures perfectly beautiful that were not Italian at all. Let each erection, then, be at least good and sufficient, and, if only it may be, beautiful also. Why must houses be *facsimiles* of each other, interminable rows of unmitigable ugliness? If I had my will, I would have no two absolutely alike, but different from each other, as are the lily and the rose, each perfect, and each beautiful.

Viser Dieu should be our motto here, as in everything else, for in God resides all beauty. No single elevation ought to be raised without the aid of a competent constructor—a man of real taste, refinement, and skill; in short, an architect. But houses in thousands, nay, tens of thousands, are run up, to use the patent phrase, by persons who, because they happen to know how to lay a brick, or plant a rafter or a joist, imagine themselves equal to every artistic requirement. A builder, I freely admit, may be most able, intelligent, and industrious, but he is not, therefore, an architect—is he? Every one ought to stand upon his calling. We do not require a gardener to draw up an outline of the vegetable kingdom, an apothecary to set forth the practice of medicine, or expect a man before the mast to sail ships across the seas. The builder may fitly execute, but it is the master, the architect's part to plan. At the same time, the young architect, I submit, while he has his Vignola at his finger-ends, ought to be practically conversant with all his materials, and not be led away by the mendicant idea that outlay merely and art are one. The humblest, most inexpensive structure may be made to evince a real taste, the truest economy.

CITY IMPROVEMENTS AND CITY RATES.

THERE was an animated and somewhat warm discussion last week at the meeting of Commissioners of Sewers on the question of improvements as connected with local rates. The Finance and Improvement Committee recommended the declaration of a consolidated rate of 7d. in the pound for the half year, which was opposed by Mr. Bedford, who maintained that the recommendation of the committee was unnecessary, inexpedient, and unjust. Referring to the subject of improvements, he said it was a mistake to pay for large metropolitan improvements out of City rates. They ought to be paid for by metropolitan rates. In continuation he said that "they were going mad on improvements." He had calculated that the line of improvements that had been laid down by the engineer would cost 7,000,000*l*. He hoped they would agree with him that a 6d. rate would be ample. The great question in the House of Commons next session would be that of local taxation, and if the view of Mr. Goschen were carried out the cost of improvements would be proportionately borne by owners of property, who alone benefited by them. He advised them to wait the decision on this question before raising their rates, as they had ample funds to meet their engagements. He moved as an amendment that the consolidated rate for the half-year be 6d. instead of 7d.

This amendment was seconded by Mr. Deputy Hora, who endorsed Mr. Bedford's remarks, stating that "they were going improvement mad, and the sooner they put a stop to some of their improvements the better." A public board, he said, ought to have no more money than it absolutely required.

In the discussion which followed it was contended by several members that a 6d. rate would not be sufficient to meet their engagements, and Mr. Knight warmly urged that the Commission ought to place some confidence in the committee, and be guided by their opinion.

The amendment, however, on being put, was carried by a majority of nearly two to one, the proposal of the committee for the higher rate being thus defeated, and a 6d. rate agreed upon.

THE CENTRAL STATION IN RANELAGH STREET, LIVERPOOL.

THIS station, the joint property of the Midland, Great Northern, and Manchester, Sheffield, and Lincolnshire Railway directors, acting as the Cheshire Lines Committee, now approaches completion. The directors forming the committee have inspected the building, and the new line from Brunswick station, of which the central station is the terminus, with the view of making preparations for throwing the line open to the public. The great advantage of the central station, when completed, will be that the traveller by any one of the three lines with which the Cheshire Lines Committee are concerned, will be enabled to travel by train direct from the centre of the town. For the following particulars we are indebted to the local *Journal*.

The scheme for having a line leading right into the centre of the town from Brunswick station is not of very recent date, but in 1870 the work was begun in earnest, the contract for the construction of the new line and the station being in a competition let to Messrs. Kirk & Parry.

The new line is about a mile and a half in length between the Ranelagh-street Terminus and Brunswick Station. Between that station and the St. James's Station—about half the distance to Liverpool—the line runs along an open cutting, the remainder of the distance to Liverpool being through a tunnel, with three side openings and one open cutting from above for ventilation. The course of the tunnel is under Great George-street, along Berry-street, and down Back Bold-street. In connexion with this line is a new line which is being constructed between Garston and Manchester, and when this is completed it is expected that the distance between the Central Station and Manchester, although fully two miles more than by the London and North-Western route, will be traversed in less time, and that express trains will do it at the most in forty-five minutes. There will be fewer junctions on this line than on the other, so that speed will be less frequently slackened whilst on the whole the line will be much more level than that from Lime-street. The St. James's Station will be sufficiently commodious for the large traffic which it is sure to attract, besides being used as the station at which all trains for the central station will call for tickets to be given up. It will have a north and south platform, each 15 ft. wide, and 360 ft. in length, with several waiting-rooms. The tunnel between the two stations is laid with three lines of rails. On leaving the tunnel towards the terminus, these three lines gradually deploy out until, at the extreme north end of the central station, there are no less than eleven lines of rails, running into four platforms—two of the platforms being single and two of them double. The arrival trains will come to the single platforms, on the west side of the station, between which there is a cab approach and stand. The other two platforms will be used for the despatch of trains, and are to the east side of the station. The longest platform is 800 ft. in length, and the shortest about 500 ft.

The station at present is of a triangular form, the west side of the triangle being bounded by Back Bold-street, the east side by Renshaw-street, and the north side by Ranelagh-street; and, although the shape of the ground proved inconvenient when the station was about to be roofed over, it turned out highly suitable for the terminus, as it gave ample accommodation for a multiplicity of lines—a great desideratum where a large traffic exists. It is in contemplation, however, to extend the station considerably, and the committee have powers by which to acquire the whole of the property on the south side of Ranelagh-street, which will very probably soon be put in operation. The roof which now covers the station is 160 ft. in span; the rise from the platform to underneath the side of the main rib, 65 ft.; and its total length is 670 ft., including the continuation on the other side of Newington Bridge, the existence of the latter having necessitated a break in the structure. The roof is not of the ordinary truss construction, but the whole of the strains are upon the arched main ribs, which are 55 ft. apart from each other. The tie-rods are of crucible cast steel, 3¼ in. in diameter, the object of the tie-rods being to keep the heels of the ribs from spreading. The tie-rods are looped up by radial rods from the ribs into a segmental shape, instead of being left to "sag," or rather as they would seem to do if left in a horizontal position. Owing to the absence of truss-work, the roof is extremely light in appearance, notwithstanding that at least one-half is composed of boarding. The glass used in its construction is Hartley's patent rib-glass, ¼ in. in thickness.

The buildings connected with the new station are of an irregular and somewhat nondescript character. At the terminus of the line is a large three-story building, 140 ft. in length, 60 ft. high, and 70 ft. wide. The style of architecture is a mixture of Tuscan and Ionic; but if the frontage was not hidden from view by a range of smaller irregular buildings, to be used as parcel offices and for inquiries, the view from the street would not be at all an unpleasant one. The basement floor of the principal building will be used as a booking-office, in which there will be seven windows for the sale of tickets, passengers being at liberty to book by one or other of the three lines to which the station jointly belongs.

In the new station there will be commodious waiting-rooms. The rooms upstairs will be used as offices for conducting the business of the committee. First and second class refreshment-rooms and a large dining-room are situated in a building to the east of the booking-office, and quite apart from it. The management of these has been entrusted to Spiers & Pond. There will be no hotel for the present, at least in connexion with the station; but when the further extensions anticipated are carried out, the committee intend building one at the corner of Renshaw-street and Ranelagh-street, up to which part of the town the station will then extend.

The station will be approached by four gateways from Ranelagh-street, each gateway being 20 ft. wide.

The cost of the new works, including the line from Brunswick Station, but not the property purchased by the committee to enable them to carry out these improvements, is estimated at between 300,000*l.* and 350,000*l.* The whole of the works have been carried out under the engineering direction of Mr. John Fowler and Mr. Walter Marr Brydone; Mr. William Morton being the resident engineer.

THE COMING EXHIBITION.

A MEETING of the sub-commitee for architecture, building contrivances and materials, was held at the Albert Hall, on the 28th inst. Col. Galwey in the chair; and Col. Wray, Mr. Horace Jones, Mr. Roger Smith, Mr. W. Bird, Mr. Grant, Mr. Elger, Mr. Kirkaldy, and Mr. Godwin attending. Captain Clayton acted as secretary. Various very liberal offers of timber, iron, and other materials for the contemplated series of experiments were accepted. The funds for these experiments are not yet assured; it is to be hoped the societies appealed to will give some assistance. A complete Moorish house will be erected in the grounds.

On the previous day a meeting of the sub-committee for sanitary apparatus and construction, was held at the same place,—Dr. Hardwicke in the chair; and arrangements were made to accommodate various exhibitors of processes for utilising sewage, and building in concrete. The number of applicants for space in this department, exclusive of foreign exhibitors not yet reported, is something over sixty. Applications from manufacturers and inventors would, doubtless, still receive attention.

BUILDING IMPROVEMENTS IN OXFORD STREET.

THE architectural character of that portion of Oxford-street near New Bond-street has just been improved by the erection of a block of new buildings on a site which, until recently, contained a very low class of property. The lease of the property in question, which belongs to the City, having expired, the old dilapidated buildings, and the site upon which they stood, passed into the hands of Mr. Sedley, of New Bond-street. The old buildings having been demolished, a new block has been erected on the site, which occupies an area of about 15,000 ft. The new buildings, which are four stories in height, front towards Oxford-street, and consist of four large and handsome shops on the ground-floor. The main portion of the elevation above the ground-floor is faced with patent red brick, the dressings and mouldings being in Portland cement. The great depth of the premises admits of ample space for showrooms and warehouses in addition to the shops to the Oxford-street frontage, and several of these have already been taken. Amongst the tenants are Messrs. Potter, of South Molton-street, engineers, who have taken a portion of the premises 200 ft. in depth by 40 ft. in width, for the display and sale of their articles of manufacture, which include large and ornamental gates, doors, and so on. The property has been designated Sedley-place, and it is stated that the rental, including the extensive cellarage in th basement, will be about 3,000*l.* per annum. The architect is Mr. Richard Bell, and the contractors are Messrs. Bywaters.

THE PRESENT CONDITION OF ARCHITECTURE.

ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the members was held last Friday evening, the 23rd inst., Mr. E. J. Tarver, president, in the chair, when the following gentlemen were elected members:—Messrs. E. W. Mountford, J. W. Boucher, E. O. Burton, and F. J. Chambers.

Mr. Bowes A. Paice, secretary, announced that the first visit of the session was made on Saturday afternoon, the 17th inst., to the schools (on the Prussian system), in Jonson-street, Stepney, when Mr. T. Roger Smith, by the aid of a large number of drawings, fully explained the arrangements and construction of the building; and he now begged to propose a vote of thanks to that gentleman for his kindness. Their next visit would be duly announced in the *Builder*.

Mr. W. H. White, F.R.I.B.A., then read a paper "On the present State of Thought concerning Architecture." In the course of his remarks, he said that the subject of his address was of an important character; and the fact that the vast majority of the people, so successful as the British, knew little about architecture, was sufficient proof to many persons that the true or false appreciation was of no national importance. But they should learn to distinguish between the genuine and the spurious article. Like the modern freemasons, they revelled in the semblance of mystery, and with far less excuse. Freemasons held secrets which were not worth disclosing, whilst architects trafficked in knowledge which it was suicidal to keep secret. Architects had not the courage of their convictions, and discredited in practice the theoretical means of proving them correct. In the choice of a style, the would-be client had only a little less confidence in himself than in the practitioner he consulted. He knew modern architecture was based upon the traditions of the past rather than the experience of the present; he knew, too, that an architect proper no longer existed. If he starved he did so by rules of art. This contradiction to the spirit of the architect would matter but little if, out of the chaos of architecture, something was transmitted in a tangible shape. Whilst a touch of nature made the whole world kin, a touch of art seemed only to divide them. Of the works of art which had been practised throughout the last three centuries, nothing survived. They had restored mediæval cathedrals and other works in a manner which would astonish the builders of them; but in spite of the resurrection almost general throughout the land, no one was convinced. Gathering courage from despair, they had unearthed a mystery. The antagonism existing between engineers and architects was due to the ignorant negation during the last 300 years of that philosophy which alone could raise architecture above the builder and the old curiosity dealer. The average client of to-day not only hindered them, but imposed upon them his taste; and an architect was now thought to be a luxury of commerce, and was known by the modicum of taste he possessed, which, in the days of Pope, was the curse of the few. Taste was to art what charity was to religion—they both covered a multitude of sins; and taste was the certain prey of error or disaster. Taste was the demon to whom the practitioner sacrificed himself when he inquired what style his client would like to adopt; it encouraged a trade in forged antiquities, and stimulated a system of falsity. That which was known as taste in art would be called an ugly name if it were applied to the ordinary circumstances of life. Modern art was seldom received in polite society, except it was attired in fancy costume. With regard to the young architect, he was entering life with the usual exalted views of the position of archi-

tecture. Like everybody else, his first object was to get some one to employ him; and whatever style of architecture he might choose to adopt he was prepared to execute his clients' wishes to the best of his ability, for it was a question of commerce. He must be a good draughtsman, for his clients would want to see something more than sketches; and if he could not cater for them they would go to others. To architects was partly due the Ritualistic revival which had too long irritated the nation. Creeds and styles were undoubtedly the tribute of man; and by many conscientious people they were regarded from an antiquarian point of view. The next generation might perhaps be spared these battles "twixt Tweedledum and Tweedledee." The so-called Queen Anne revival should not be entertained for an instant; and there was now nothing left to be called upon but utilitarianism, pure and simple. If they were to fight engineers successfully it must be done with their own weapons. Architects had all the materials at their disposal; and buildings should be erected without superfluous mouldings or elaborate decoration. Was there not, he would ask, any moral obligation binding on the practitioner to respect the principles of architecture? The authors of this last revival, knowing what was right, yet did wantonly what was wrong. The interests of the greater number were being sacrificed to the few. The battle was to be fought, and the cause was one of common sense. The actual condition of the public mind concerning architecture was one of confusion, perplexity, and despair. The Government had no alternative, and the ultra-Mediævalists and the Queen Anne school were fully satisfied with the condition of affairs; but he would, in conclusion, urge upon them to set their faces against this Queen Anne revival.

Professor Kerr said that the paper just read suggested a deal of thought, and the writer possessed the rare felicity of being able to say bitter things without any bitterness. The impression it had left upon the mind ought to be one for good; it had attacked everything, and defended nothing. To members of the Association it was undoubtedly instructive. He had been an architect for a great number of years, and the longer he lived as an architect the more dissatisfied he felt with the profession of architecture; it seemed to him to serve the practitioner neither one way nor the other. It did not produce a full pocket, nor command public respect; and when one was dead and gone, he was only laughed at. Even Sir Charles Barry, probably the greatest genius in the present generation, was scarcely in his grave before there was contention after contention about his great work at Westminster upon questions of design; and now a similar demonstration, or a much more demonstrative one, was taking place regarding what was said to be the supreme style of architecture and excellency. It was of no use to design, for the style would go out of fashion as well as anything else.

Mr. T. Roger Smith confessed that the paper was really one difficult to criticise. It seemed to him that they must look at the position of matters and see if they could ascertain in which way they stood artistically. They had been born at an unfortunate time when the great period of artistic activity was going on and there was very little impulse to push them forward. They stood there, with their knowledge and tastes formed by thought, and it was perfectly absurd to attempt to ignore the fact that they had within their reach the precedents of Roman, Italian, and Gothic architecture, and they must to a certain extent use them. It was perfectly possible to erect plain common-sense buildings without any ornaments at all, and to make architectural drawings without any ornament; but there was a very large amount of architecture which must be done with architectural effect. Men had been artists before them, and all they could do was to improve a little what these artists had laboured to do for generations before them. One of the great architectural movements of the present day,—the Gothic revival,—reflected the kind of feeling which existed in the nation; but a great deal of it had now gone too far.

Mr. Edis thought as to the Queen Anne revival there was a great deal to be said for it; and if it had got them out of the stucco work, or pseudo-Classic work, he, for one, would be thankful. The School Board were doing a great deal of good; they had insisted, in the designs for new schools, upon having only plain buildings without any ornaments.

Mr. Phené Spiers was of opinion that it was a natural craving of the human race to have ornament of some form; every architectural nation had been guilty of the same faults which Mr. White had condemned. Architecture was not imitative, it was creative; and those who copied one material did it with the idea of imitating, but they were creating certain forms of building. He would recommend the members to study the principles of architecture laid down in M. Viollet-le-Duc's dictionary.

Mr. Armstrong contended that very few houses were built to the satisfaction of the clients. Elaborate ornaments placed outside houses only increased the expense; and if architects would endeavour to make buildings more plain and useful they would be more successful.

Mr. S. Flint Clarkson said that architects were blamed for that which they were not thoroughly responsible for; and this was fully exemplified in the building of churches, for the Church of England, as a body, did not know the style in which they wanted churches built. He would recommend architects to do the best they could, and not be led away; and to respect their principles, and admire and follow out, as best they could, what was high, noble, and thoroughly pure in architecture.

The president said, with regard to the Queen Anne revival, that while it lived it was a living style, and was a progressive style while it lasted. In reverting to it, then, they were reverting to a living style. As far as construction was concerned, they appeared to be returning to it; but it was a mistake to revert to poor mouldings when they had better at their command.

SURVEYORSHIPS.

THE Marylebone Vestry have resolved to issue advertisements for a surveyor, at 600*l.* per annum. ——Mr. James Hall, assistant borough surveyor, Tynemouth, has been unanimously elected surveyor to the South Stockton Local Board. There were ninety-six applicants for the appointment. ——The Sheffield Highway and Improvement Committees have reduced the list of candidates for the borough surveyorship to the following six:—Mr. P. B. Coghlan, civil engineer, Margate; Mr. J. Bryson, assistant borough engineer, Newcastle; Mr. R. Vawswer, borough surveyor, Warrington; Mr. W. H. Lancaster, chief assistant to Mr. Holmes; Mr. J. Pagan, assistant in the highway office; and Mr. J. A. Monks, surveyor, Broomhill. At another meeting each of these candidates will have an interview with the committees, and the list will then be further reduced to three, and from these the council will make a final selection.——A special meeting of the Rugby Board was held last week, to receive the resignation of the surveyor, Mr. Palmer, who has accepted an appointment at Great Malvern. The chairman, on behalf of the Board, said that they should be very sorry to lose Mr. Palmer, and he thought a resolution should be passed on the subject at the next general meeting of the Board.——Mr. John H. Swan, of Cannon-street, has been selected from a number of candidates to fill the office of surveyor to the Walthamstow Local Board.——The South Shields borough surveyor is Mr. Matthew Hall; not, as recently stated, Manhurstall.

THE DISCOVERIES IN THE TROAD.

SIR,—Some light may be thrown on one point in the most valuable discoveries in the Troad, described in last week's *Builder*, by Hebrew literature. You mention, in your interesting article, a silver goblet, and three large silver vases, which all possess the peculiarity of being rounded on the base. There were a large number of gold and of silver vessels among the treasures of the Temple at Jerusalem, which were formed in the same way. We know the cause in this case; and the inference may be drawn, that the Trojan vases, which were accompanied by six electron knives and by a silver dish, were intended for sacrificial use.

In the Codex Pesachim, or *de Paschate*, of the Talmud (caput v., mischna 5), it is stated, that, when the paschal lamb was slain in the Temple, the priests stood in ranks, with sacrificial bowls of gold and silver in their hands. The ranks were distinct; that which held the golden vessels, having them all of gold, and that which held the silver, all of silver. The appointed Israelite (*not* a priest) slew the victim. The officiating priest caught the blood in a bowl, and handed the vessel to the nearest in the row, who exchanged it for the empty bowl of the next, and the blood was thus handed on to the last of the rank, who dashed it on the foundation of the altar.

The exact point lies in the conclusion of the mischna in question, "and the vessels had no stands, lest they should set them down, and the blood might coagulate." Bartenora remarks on this, that the vessels in question were wide above, and narrow below, and that they were so formed that they could not stand, lest the priests, when the sacrifices were numerous, might set one on the ground, and forget it, so that the blood should coagulate and become unfit for aspersion.

The blood in this case was cast from the bowl, and not from the finger of the priest. This latter mode of aspersion was only practised in the case of the sin offering.

FRANCIS R. CONDER.

WOOD-WORKING MACHINERY.

SIR,—Believing that your columns are always open for the dissemination of useful knowledge, may I beg for an answer from one of your numerous correspondents to the following questions:—Why does not wood-working machinery pay as well in England as in the United States? And, Why is it not more in general use? I have resided in England during the year 1873, and on making inquiries have been surprised to find that three-fourths of the work which could be done by machinery is still done by hand; and that a great many employers, with large establishments, seem afraid to embark in machinery; while many who are now using it fail in making it a success. Now, why is this? I find that everything connected with machinery is cheaper here than in the States,—such as iron, coal, and labour (both in the manufacture of machinery and in using it), and that almost every quality of pine for the making of furniture, sashes, doors, blinds, and joinery work in general, is about the same price.

The Exhibition in Vienna last year proved beyond a doubt that England leads the world in the manufacture of machinery, and yet, in the application of it, she is a long way behind. I am aware the cry is often raised, that the introduction of machinery means the reduction of wages; but the fact that mechanics of all kinds are better paid on the other side of the Atlantic than here, will, I think, sufficiently disprove that. I think if machinery were brought more into general use, we should see a great improvement in the style and design of furniture, and it would be sold at a much cheaper rate than at present; and if used more in joiners' work we should see more tasty dwellings erected for the working class, instead of the wretched hovels which bear that name, or the prison-looking buildings called model lodging-houses.

B. J. A.

SHIPS' BOATS.

SIR,—Would it be impossible to have in a false cannon (in the porthole of a ship) a boat, which could be expeditiously launched when required, by something on the principle of a boy's pop-gun? H.

*** And where would it be "popped" to? Anyhow, nothing can well be worse than the mode in which ships' boats are at present managed.

EXTENSIVE NEW BUILDING PROJECTS IN WALWORTH.

WE understand that new building undertakings on an extensive scale will shortly be commenced in those portions of Walworth lying between the main Walworth-road and Kennington-park-road, and that they will involve the absorption of large areas situated within this particular district, including, amongst other sites, the Surrey Gardens, the spacious area, not far distant, now used as a vitriol manufactory, and other neighbouring plots of now vacant ground. It appears to be generally understood that the Surrey Gardens are not likely again to be opened as a place of public entertainment, but that they will shortly be utilised for building purposes. The preliminary step in this direction has, indeed, been already taken by the London School Board, which, under the powers it possesses, is now taking measures for the compulsory purchase of a portion of the grounds, on which to

erect a Board school; and we learn that negotiations are also in progress for the purchase of the whole of the remaining portion of the grounds forming the gardens, with a view to their being at once laid out in streets for building purposes. We understand that in the event of those negotiations being completed, the whole of the estate, consisting of several acres, will be so laid out as to admit of some hundreds of houses being erected, but that the plans contemplate the retention of the large and spacious theatre which, it is said, will continue to form one of the dramatic places of entertainment in South London. The vitriol manufactory to which we have referred, which it is said is also to be utilised for building upon, will admit of a large number of houses being erected on the site, and it is computed that in the course of the next twelve or eighteen months the population in this locality will in all probability be augmented to the extent of some 2,000 or 3,000. In connexion with this projected building it is further stated that a new church district has been formed in the locality, by separating a portion of the district of St. Paul's, Lorrimore-square, which at present contains a population of 16,500, and it is calculated that the new buildings to which we have alluded will bring up the population of this new district to 6,000. In anticipation of such population a new church, to be dedicated to St. Agnes, is about to be built, towards which one donor alone has already contributed the sum of 3,000*l*.

BERTHS FOR INTELLIGENT WORKMEN IN MINES.

THE Legislature, having determined to put a stop to inefficient management of mines, owing to which many men have lost their lives, the Home Office, in carrying out the Act of Parliament on Coal Mines, 1872, have appointed examiners of candidates for certificates of competency, and seventeen young men appeared at Darlington, before Mr. J. Daglish, M.E., of Tynemouth; Mr. A. L. Steavenson, M.E., of Durham; and Mr. John Foreman, the appointed examiners.

The candidates came from various parts of the district under the jurisdiction of the South Durham Board, which comprises the Whitby, Cleveland, Westmoreland, and South Durham mining districts.

The subjects of the examination comprised the geology of Northumberland and Durham, especially in reference to the coal formation; the practice and theory of ventilation, and the nature and properties of gases; the practical knowledge of the machinery and boilers generally in use at collieries; underground surveying; practical mine working; an acquaintance with the provisions of the Coal Mines Act of 1872.

The examination lasted upwards of eight hours; in addition to which each of the candidates underwent a separate *viva voce* examination.

As appointments fall in, the managers of mines,—who have lucrative employments,—will be selected from the list of those men who have passed the examination. It remains to be seen if this step will prevent explosions.

THE SHOCKING STATE OF SKELMERSDALE.

THE sanitary condition of Skelmersdale has now been brought under the notice of a Government inspector,—Lieut.-Colonel Ponsonby Cox. The ratepayers, after protracted and ineffectual negotiations with the Ormskirk Rural Sanitary Authority, recently unanimously adopted the Local Government Acts of 1858. A petition for permission to establish a Local Board was accordingly sent to the Local Government Board, who ordered the inquiry. About 200 colliers, residents in the neighbourhood, were present, and abundance of evidence was given.

Mr. G. W. Goodison, civil engineer, Liverpool, said he had been retained by the committee acting on behalf of the ratepayers to inspect the district, which he had done on four different occasions. The report, which was printed, was accepted by the inspector as Mr. Goodison's evidence. In this report he says:—

"In all my experience I have not seen anything to be at all compared with the present state of Skelmersdale, and no words of mine can convey the impression it has made on my mind. There is no wonder the place should have been so full of sickness, and that diphtheria and scarlet fever should have taken the children by scores. Some families have lost as many as three and four of their little ones during the last two or three months. Had it not been that Skelmersdale is naturally very healthily situated,—being in the midst of a fine open country, and at an elevation at its highest point of about 240 ft. above Ordnance datum,—and that the houses are scattered over a large area, my firm conviction is that some terrible epidemic would ere this have visited it, and left its mark never to be forgotten. I think, therefore, it has escaped wonderfully, considering its vast mass of filth, the total absence of pure, wholesome water, or proper means of drainage, and the wretched character generally of the houses themselves. Overcrowding is also to be found in a great many houses. . . . What Skelmersdale wants is an active and intelligent Local Board."

The inspector himself said he saw enough in an hour and a half to convince him that the sanitary state of the district was shocking; in fact, he was quite horrified. It was clear that the powers of the Rural Sanitary Authority were not sufficient to meet the state of things which existed, and which was likely to exist.

The inspector will, of course, make his report to the Local Government Board; and it is to be hoped that not a moment will be lost in preparing for warfare with the abounding filth, the uninhabitable houses, the abominable water-supply, and the utter want of proper drainage which have hitherto prevailed in Skelmersdale.

SCHOOL BOARDS.

The New Offices for the London Board.—At the last meeting of the London Board, the committee reported that Messrs. Woodfall & Kinder, the leaseholders and occupiers of the property on the east side of the new Board offices, and also the Duke of Norfolk, the freeholder, consider that their rights of light and air will be infringed if the building be erected in accordance with the plans. The committee are of opinion that this is not the case; but in order to save the delay which would arise if an injunction were obtained in Chancery restraining the Board from proceeding with the building, they have agreed to refer to Mr. I'Anson the question of compensation, if any, to be paid in satisfaction of the above claims.

BUILDERS' ACTIONS.

PETTIGREW AND ANOTHER *v.* STRIDE.

THE plaintiffs in this case, tried in the Court of Common Pleas, before Mr. Justice Brett, Messrs. Pettigrew & Moyes, were builders, and the defendant, Miss Stride, was a lady who is well known as devoting her life to works of charity. Some time after the Coram-street murder had been committed, she took the house in which that crime was perpetrated and converted it into a home for discharged prisoners. The premises wanted some repairs, and among other things the blood-stains from the murder had to be obliterated. The plaintiffs contracted to do the work for 69*l*. 10s. Of this 20*l*. had been paid, and 9*l*. more was paid into court. The present action was to recover the balance.

The principal question in the cause was whether the work had been well and properly done; and upon this question evidence was given on both sides.

The jury found for the plaintiff for 36*l*. 10s. beyond the sum paid into court.

"DICTIONARY OF ARTISTS."

SIR,—Will you permit me to call attention to an omission in the valuable "Dictionary of Artists of the English School," by Mr. Samuel Redgrave, which has been recently published by Messrs. Longmans, Green, & Co.?

Whilst enumerating many of the minor works of my father, the late Capt. Fowke, R.E., Mr. Redgrave omits to mention the fact that the original design for the Royal Albert Hall was his.

I have pointed this error out to the author, who has kindly promised that it shall be corrected in any future editions of his work; but, as he does not contemplate its speedy re-issue, I trust that you will allow me, at once, to notify an oversight which is most damaging to my father's memory, and which, occurring in a work of so high authority, is doubly injurious. FRANK REDE FOWKE.

ALLEGED ILLEGAL DISMISSAL OF A CARELESS WORKMAN.

PICKERING *v.* THE BRITANNIA IRONWORKS COMPANY.

THIS action, brought to recover the sum of 7*l*. 18s. 6d., at the last sittings of the Durham County Court, has for some time past created considerable excitement between the working men of the North of England and extensive employers, and, as will be seen, a question arose as to the right of employers instantly to dismiss a man on the plea of dangerous negligence, without paying wages due or giving the usual notice.

In November last, the defendants in the present action sued the present plaintiff for compensation for loss caused by him for having negligently fixed a manhole-plate in an immense boiler, which stopped the works, as well as endangered the lives of several hundreds of men and the total destruction of the Britannia Ironworks.

Evidence was then given on behalf of the Britannia Ironworks Company that it was Pickering's (the present plaintiff's) duty to fix the plate; whilst Pickering contended that it was not his duty to fix the plate, but that of the hammer-driver; and secondly, that he had not been guilty of negligence, forasmuch as the usual marks (crosses made with a chisel) to guide workmen in fitting the plate had not been cut on the plate in question, and that the company were bound to have seen to this, and by not doing so they were the negligent parties, and had a loss of life taken place, the company would have been answerable for the disaster.

The Judge, upon that occasion, found a verdict for Pickering, on the ground that the company had themselves been guilty of contributory negligence in not having the usual marks affixed to a plate of so particular and dangerous a nature.

Pickering having 4*l*. 18s. 6d. due for wages, applied for payment, and it did not clearly transpire why the company refused it, seeing that the law had ruled that the master was as bad as the man; but when the present suit was brought, the company paid the wages into court in full satisfaction of all demands. Pickering refused to accept the wages by themselves, as doing so would have made him relinquish 3*l*., a fortnight's wages, he claimed in lieu of notice and wrongful dismissal.

Counsel were now, as before, retained at considerable expense, and delegates of workmen were also in attendance.

In answer to Mr. Chambers, who appeared for the plaintiff, Mr. Pickering, now stated that he was formerly in the employment of Messrs. Radcliffel, Hopper, & Company, the representatives of the Britannia Ironworks, as a boiler-tenter, until the latter part of last year, when he was dismissed without the usual notice. The workmen connected with the works were bound, according to one of the rules at the foundry, to give the masters a fortnight's notice, and the masters were required to do the same to the men.

On the 9th October, last year, Mr. Wilson, the engineer of the works, went to witness and said, "You have made a fine job of it." Mr. Wilson referred to the bursting open of the man-hole, and desired him to go home, as he had put another man in his place.

Mr. Wilson, the engineer, was called to give his version of the matter, on behalf of the defendants. He stated that since the trial in last November, he had more carefully examined the man-hole plate in question, and found that the usual and necessary marks were actually on the plate.

In cross-examination by Mr. Chambers, he said he had prepared the plan of the man-hole produced at the previous trial. He did not show the marks on the plan because he did not think they were of any importance to the case. A man might look at the plate fifty times and not see the crosses, unless he searched particularly for them. He believed the masters gave the men a fortnight's notice. It was Pickering's duty to keep these cross-marks clean. It was not possible to put another plate on the man-hole.

George Cockburn, foreman smith, said that the marks were properly affixed to the plate at the time the explosion took place in October last. Pickering was formerly a hammer-driver in the firm.

The Judge said, at the last trial it was sworn that these crosses were not marked on the plate; but it had been now proved that they were there. If these marks were filled up with dirt, it was the fault of Pickering, the plaintiff, in not keeping them clean. It also turned out that the plaintiff was formerly a hammer-driver himself, and therefore ought to have been familiar with the work of fixing these doors. He therefore considered there was sufficient negligence on the plaintiff's part in justifying the defendants summarily dismissing him; and more negligence had now been shown on the part of Pickering than at the previous trial. He should order the wages paid into court to be given to the plaintiff. On the question of dismissal, he found for the defendant, with costs against the plaintiff.

The latter order will more than absorb the wages paid into court; so that Pickering, instead of drawing any money out, will have to pay some in, most probably.

REGISTERING STEAM GAUGE.

SIR,—Your readers will be interested to have a slight description of Everett's Registering Steam Gauge, which is now being introduced into this country, after having been for some time adopted in America. It consists of an ordinary gauge, with two additional dials, one registering the extreme pressure ever attained in the boiler, and the other the number of times in any period that the pressure rises above a pre-arranged pressure or pressures. It is also impossible for any one to obtain access to the registering apparatus, without the tampering being apparent to the most casual observer. This being the case, there is no doubt in my mind, that the adoption of the gauge will produce a very salutary effect upon the caution displayed by stokers and drivers. My own experience tells me that superintendents and proprietors of steam-boiler, little know how often the pressure obtained exceeds the prescribed limits, and it is well we should have ocular demonstration of this when going the round of inspection. I have had one of Everett's gauges at work, in connexion with the boiler in use in this school for some time, and its action is perfect; it is also very simple, and not at all likely to get out of order. J. W. WILSON, Principal,
Practica Engineering School, Crystal Palace.

ACTION FOR EXTRAS.

ON Monday, the 26th, the Judges of the Court of Exchequer, sitting in *Banco*, the Lord Chief Baron Kelly and Barons Piggott and Cleasby, decided an important and long-pending case with regard to the law of extras.

The plaintiffs, Messrs. Laidlaw, are iron pier builders, of Glasgow, and had contracted with the Hastings Pier Company to erect the Hastings Pier for the sum of 23,250*l*. After the pier was built the plaintiffs sent in a further claim for extras. The Pier Company objected to pay for these extras, and Messrs. Laidlaw brought an action to recover the amount. After the matter had been gone into, the Court ordered it to be turned into a special case, and accordingly it now came before the judges in *Banco*.

From the statement of Mr. Watkins Williams, Q.C., who appeared for Messrs. Laidlaw, it seemed that the contract was signed on December 9th, 1869, and on the 16th the plaintiffs got instructions to proceed with the works. By a clause in the contract the pier was to be finished in March, 1871.

By one clause of the contract the plaintiffs were to be paid by monthly subscriptions, upon the certi-

ficate of the Pier Engineer, Mr. Birch, that work to the amount signed for, had been executed, and was satisfactory. It was also stipulated that no extra work was to be paid for unless certified to be necessary by Mr. Birch, and this certificate was also to be signed by the Chairman of the Hastings Pier Board of Directors. The items for the extras amounting to 2,000*l.* were many, and various, and disputed.

The defendants denied their liability to the cost of these extras, on the ground that the Chairman of the Board of Directors had not countersigned the orders for them, with the exception of trifling items. The Engineer's own certificate, it was contended, was valueless, without the Chairman's signature.

The Lord Chief Baron, after a long argument, said the court were unanimous in their opinion that judgment must be pronounced for the plaintiffs, with full costs.

ACCIDENTS.

Partial Destruction of Whitby Abbey.—This edifice has been partially destroyed by fire. Owing to the efforts of the fire-brigade, only the western and middle parts were burnt. The most valuable portions, consisting of the pictures and plate, were saved. Mr. Petrie, the owner, is fully insured.

A House Blown Down at Driffield.—Mr. Weatherill, of Hutton Cranswick, had just erected a new house and shop, at the corner of George-street, facing Middle-street, but not slated, and during a recent gale the roof and upper story of the building were blown over, and the greater part of the brickwork came down upon Boak's Photographic Gallery, under the north side of the building, which is seriously injured; the remainder of the north wall is cracked and bulged out. A large pile of timber was also blown down, and fell upon Mr. Temple's wall, and knocked it down.

Fall of a House Floor during a Sale at Holmfirth.—At the village of Scholes, where Mr. J. Sanderson was conducting an auction sale, at a cottage house of a person named Littlewood, the sale was being held on the ground-floor, when the floor gave way, and the occupants, mostly females, fell into the cellar. Fortunately none were seriously hurt.

SANITARY LEGISLATION.

SIR, — Any letter over the subscription "S. G. O.," is sure to contain something valuable, from the extensive knowledge and experience of the writer. One that appeared in the *Times* of the 1st instant fully bears that character, though I cannot quite agree with the writer in some of his conclusions. Fully agreeing with "S. G. O." in many of his facts, I think I can explain in some measure how it is that the Public Health Act of 1872 fails to fulfil the object of its projectors, and I am the more readily able to do so from the fact that I hold the position of Medical Officer of Health to a Board "within a few hours' drive" of the spot whence "S. G. O.'s" letter is dated.

On the passing of the Act referred to, and the reception by the Local Board and Rural Sanitary Authorities of the instructions from the Local Government Board to appoint medical officers of health and inspectors of nuisances, there was considerable delay in making the appointments, each "Authority" waiting to see what its neighbouring "Authority" was about to do. This delay was rather augmented by the different advice given to the "Authorities" by the inspectors of the Local Government Board in their various districts, some advising the appointment of the above-mentioned officers for large and widely extended districts; others for small and more limited areas. Some of these medical officers are not appointed at this time.

The appointment I now hold was made in August last, that of the inspector of nuisances two or three months later; consequently our work is in its infancy, and in far too crude and amateur a state even for the friendly criticism of "S. G. O." Added to which, my experience is, that however zealous the medical officer of health may be, he may and will find his suggestions thwarted when placed before his Board, either through their so-called economy, or their utter ignorance of the powers conferred upon them by the Public Health Act. My own diary and monthly reports show the delay that has taken place in acting on reports founded on analysis of water and other matters.

In conclusion, I believe that, as Local Boards and their officers become more acquainted with their duties, they will carry them out more thoroughly and effectually, as is evidenced in the case of larger towns, where a similar Act has been in force for some years; but at present sanitary matters are in a very crude state, especially in small communities. Our best thanks are due to "S. G. O." for calling public attention to the fact, and adding to the deep debt of gratitude that is due to him from his truly philanthropic services to his neighbours.

J. INGLEBY MACKENZIE, M.B., Cantab.,
Medical Officer of Health, Sidmouth.

NEW INFIRMARY BUILDINGS IN MARYLEBONE.

THE Marylebone guardians are about to erect a new infirmary in connexion with the union, but distinct from the workhouse, and have just taken the preliminary steps in respect of the purchase of a site. It appears that when the guardians proposed, a short time ago, to erect an administrative block at the corner of the Marylebone-road, the Local Government Board raised the whole question of rebuilding the workhouse; but, after considering the matter, it has been found that, in the event of a new workhouse being built to hold 500 sick and 1,500 chronic and able-bodied paupers it would be too high, and numerous stairs would be found objectionable. The workhouse reconstruction committee have, therefore, visited several workhouses where there are separate infirmaries, and have come to the conclusion that separate infirmary buildings are desirable. Acting upon this recommendation, the guardians, at their last meeting, decided to purchase a site for a new infirmary either in the parish or within a reasonable distance from the parish boundary. The site to be purchased is between two and three acres in extent, and we understand that negotiations are now in progress for a plot of land eligibly situated near the parish boundary. The estimated cost of the land and buildings is set down at about 50,000*l.*, the repayment of the amount to be spread over a period of thirty years, involving an annual rate of from one halfpenny to three-farthings in the pound.

WATER FOR THE METROPOLIS.

ACCORDING to the last report of the Water Examiner, the construction of additional subsiding and impounding reservoirs by the Chelsea, Grand Junction, and Southwark and Vauxhall Companies, is most desirable.

The Kent Company are now giving constant supply in Deptford, and having applied to the Metropolitan Board of Works in conformity with sec. 34 of the Metropolitan Water Act, 1871, for instructions for affixing hydrants to the mains in this portion of the company's district, the Board has given an order for thirty hydrants to be erected at distances of 200 yards apart. This company are about to extend the constant supply in their district.

The New River Company have now the power of affording effective constant service in their district. They have also commenced a new high-service covered reservoir to contain 1,000,000 gallons at Southgate, in anticipation of the requirements of the water supply to Edmonton parish.

The East London Company are extending the constant system of supply in their district, and have given formal notice to the Metropolitan Board of Works and to the Corporation of the City of London that they propose within the next six months to give a constant supply of water throughout a certain district.

The West Middlesex Company are giving constant supply to a number of houses on the application of the owners, who have provided fittings according to the Board of Trade Regulations of the 10th of August, 1872, and are fully prepared to extend the constant supply when called upon.

The Examiner appears to say the same thing several times over, as that his report often reads very much like the one that preceded it.

Old London.—The premises of Messrs. Hobson & Co., in Lombard-street and George-yard adjoining, have just been rebuilt. In excavating the old building, an old stone lintel was found over the jamb of an old door-way, leading to a subterranean passage. On obtaining access to this passage, and examining it, several remnants of human remains were discovered, including a number of skulls and bones. The lintel bore the date, 1669.

GLASGOW IMPROVEMENTS.

AT a meeting of the Police Board, the clerk read a report from Mr. John Carrick, in which it was said:—For many years the subject of public waiting-rooms has engaged the attention of many members of the Board, and so impressed are the City Improvement Trustees with the importance of the subject, that they have resolved to erect a commodious waiting-room, open to the public, in the immediate neighbourhood of the Cross, having suitable retiring-room for women. The question of providing resting-places has also engaged their attention, and a contract has been entered into by them for the erection of an iron structure, ornamental in its design, at the Bridgeton Cross, provided with seats and drinking-fountains. I have endeavoured in the design now submitted, to carry out on a small scale these objects. The plan purposes the erection of a waiting-room on the eastern division of the ground, plain in its character. The inside to be of glazed brick, and provided with seats, and a retiring-room for women. Outside of the building seats may be formed, which may be partly under cover of a verandah. A water fountain of a monumental character is proposed to be erected at the corner of Yates-street;—all the ground to be enclosed with suitable iron railing, and the whole laid down in grass and shrubbery. The subject of suitable "resting-places" has never received the attention its importance deserves in large towns.

Mr. Miller proposed that the Finance Committee should be taken in along with the Watching and Lighting Committee in considering this question.

The minutes and Mr. Miller's proposal were agreed to.

STAINED GLASS.

Ollerton Church.—Mr. Cecil G. Savile Foljambe, of Cockglode, near Ollerten, has designed and painted a memorial window, in the Early English style, in memory of his deceased wife, which has recently been put up in the east window of the chancel of this church. The intention of the design, by the six subjects chosen, is evidently to show the victory of Christ over death and the grave. The subjects are in panels (two in each light), with a grisaille pattern above, below, and between them. In the centre light is the Crucifixion, with the words, "It is finished," beneath; on the left of it the Entombment, with the words underneath, "A new sepulchre, in which man was never yet laid"; on the right the Resurrection, and the words below it, "I am the Resurrection and the Life." The three lower subjects are as follow:—The centre one, "The raising of Lazarus," with the words under, "Lazarus, come forth," on the left of which is, the raising to life of the widow of Nain's son, and beneath it the words, "Young man, I say unto thee, arise," while to the right is, the raising to life of Jairus's daughter, with the words below, "Damsel, I say unto thee, arise." The glass was supplied by Messrs. Heaton, Butler, & Bayne, of London. Mr. Foljambe has caused the floor beneath the window to be inlaid with encaustic tiles, to harmonise in colour and tone with the light of the same; the tiles from the firm of Ludwic Oppenheimer, London and Manchester, whilst the walls beneath, and to the right and left, are in drapery panelling in pitch pine. On the north wall of the chancel is erected a black marble tablet, which records the name, age, and parentage of Mrs. Foljambe. A short time ago Mr. Foljambe had the two tables of the Decalogue illuminated.

St. Thomas's, Nottingham.—The two chancel windows of this church have been lately fitted with stained glass, in memory of Mr. and Mrs. Sparrow, Nottingham. The subjects of the windows are unusual, there being in them no human figure. The Biblical dispensations are portrayed by means of trees, plants, and emblems. The windows are on each side of the chancel; the left window setting forth the old dispensation, the right the new; each with three divisions. The first division contains the patriarchal dispensation, which is indicated by the oak of Mamre, or Abraham's oak. Underneath it is a ram caught in a thicket of wild roses, and the text, "The Lord made a covenant with Abraham." Below this is represented the river Nile, with its lotus-flower, maize, and papyrus plant, and on either side is the sacred ibis—all suggestive of the words, "Remember the law of Moses, my servant." The lowest compartment contains the priestly dispensation

and the dawn of Christianity—a sunrise behind a frankincense tree, with the text, "The Sun of righteousness shall arise." The other window symbolises the annunciation, the triumph, and the passion of our Saviour. The annunciation is indicated by a group of white lilies, into which a dove is descending—text, "His name Emmanuel, God with us." The triumph is, of course, suggested by palm-trees, and the words, "Behold the King cometh unto thee"; and the passion by the setting sun behind an olive-tree—text, "Not my will but Thine be done." There is a border of pomegranites and roses round each window. The artists were Messrs. Heaton, Butler, & Bayne, of London. We are informed that the walls of the church, which are of brick, are shortly to be varied and lightened by decorative colouring, the whole of the work being given by a generous friend of the church.

St. Mathew's, Nottingham.—A painted window has just been erected in this church in memory of her husband by Mrs. Lambert. It is the centre of a three-light east window, the subject being the Annunciation, and is eminently pictorial in its treatment. The Virgin is represented kneeling, and surprised in her devotion by the descent of the angel. The base and canopies in the border are ornamented; lilies being conspicuous. It is intended to fill the side lights, one with the Presentation in the Temple, the other with Christ disputing with the Doctors. The whole forming the story of the childhood of the Saviour. The work is from the studio of Messrs. O'Connor & Taylor, of London.

St. John's, Cullingworth.—A stained glass window, executed by Messrs. Cox & Sons, of London, has recently been placed in this church by Mrs. G. H. Townend, of Park Royd, Manningham, formerly of the Royd, Cullingworth. It is a memorial window, and the glass is designed to suit the stone-work, which is of thirteenth-century character. The main portion is occupied with a large figure of our Lord in the act of benediction, robed in a ruby tunic, with a white outer garment enriched with ornaments, and leaded in. The head is surrounded by a nimbus, in which the cross is introduced. The back-ground is blue, enclosed by diapered shafts supporting the canopy which fills up the upper part of the window.

Theddingworth Church.—A stained-glass window has recently been placed in this church to the memory of Mrs. Elizabeth Lyne, wife of the late Robert Edwin Lyne, of Theddingworth. This window has been produced by Messrs. Lavers, Barraud, & Westlake, of London, and was on view in the late International Exhibition. It is in the manner of the Renaissance. The subjects forming the prominent centres of the three lights are as follow:—In the centre the Virgin seated on a throne, with the Infant Christ on the right; the interior of the carpenter's shop, with Christ, the Virgin, and Joseph, and representing Christ as obedient to his parents. On the left hand, the interior of the Temple, with Hannah presenting Samuel. Each subject is surmounted by a canopy, supported by square columns.

South Malling Church, Lewes.—The stained-glass window to the memory of the late Rev. William Courthorpe, for some time incumbent of the parish, has been erected. Upon the recent restoration of the church, a new window of three lights was introduced at the east end. The family of Mr. Courthorpe intimated their desire to glaze this window, and orders were accordingly given by them to Messrs. A. Gibbs & Co., of Bedford-square, London, to prepare a suitable design. The style adopted is the Early English, and the design consists of three medallions in each light, on a floriated ground. Each medallion represents an incident in the life of the Saviour, and is surrounded by an edging of luminous glass like a setting in jewels. We understand that the late Mr. Courthorpe contemplated the re-decoration of the church, and that he had, in fact, just before his last illness, given orders for the preparation of suitable ecclesiastical windows.

St. Michael's and All Angels, North Kensington. In memory of three of the missionary bishops of the English Church stained-glass windows have lately been executed by Messrs. Cox & Sons, of London; one to the memory of Bishop Gray, metropolitan of South Africa, placed in his son's church, St. Michael's and All Angels, North Kensington; and another as a memorial of Bishops Hatchard and Huxtable, sent out for the cathedral church of their diocese at Port Louis, Mauritius. The memorial to Bishop Gray is in the Renaissance style, consisting of a representation of the Ascension in a panel of simple form with a diapered ground of a rather dull blue. The Hatchard and Huxtable memorial will occupy a three-light window with broad openings, and is in the style of the fourteenth century, the centre light having the figure of our Lord, the Good Shepherd, and the side lights representations of St. Paul preaching at Athens, and St. Peter laying on Hands. Each subject is surmounted by a canopy.

Carrington Church.—A window has just been placed in the east end of the newly-erected chancel of St. John the Evangelist's Church, Carrington, in memory of the late Mr. Ichabod Charles Wright, of Mapperley Hall, at the cost of his widow and four surviving sons. Mr. Wright was a translator of Dante and Homer. The window is the work of Messrs. Burlison & Grylls, of London, who have also lately put a window in the parish church of Keyworth. The window prepared for Carrington Church consists of five lights and tracery. The centre light contains a representation of our Lord upon the Cross, surrounded by a vesica, from which proceed rays of divine glory. In the lights on either side are figures of SS. Mary and John, watching by the Cross. These figures are under canopies, and form the principal feature of the window. Above and below are quarries, upon which are bosses of colour. There is also an ornamental border. The two outermost lights are filled with the same description of ornament, but without any figures. The largest piece of tracery contains the dove, emblem of the Holy Spirit, surrounded by cherubim; while in two other pieces on either side are figures of SS. Gabriel and Mary the Virgin, the whole representing the mystery of Christ's incarnation. The remainder of the tracery is filled with ornament of a simple character.

Over Stowey Church, Somerset.—The western window in the north aisle of this church has been filled with painted glass, by Messrs. Morris & Co., as a tribute to the memory of Lord Taunton. It is the gift of his widow.

Books Received.

The Altar: its Baldachin and Reredos. By R. POPPLEWELL PULLAN. London: G. J. Palmer, 1873.

IN this pamphlet Mr. Pullan gives a number of sketches for baldacchini, and apologises for their "roughness and imperfections," on the ground "that they were executed in haste, in order that they might be published before the interest of the public should cool on the subject." If there were a general feeling throughout the country, that to put up a baldacchino over the communion-table and otherwise transform it into an altar, was the right thing to do in every church, we could understand this rough and ready attempt to supply the demand. The fact is, however, there is nothing of the kind. The baldacchino is a party flag (a very small-party flag) with which the bone and sinew of Protestant England will have nothing to do.

We much prefer meeting our esteemed correspondent of old times in his former capacity, that of explorer and recorder, than as a controversialist.

VARIORUM.

MESSRS. SPRAGUE & Co.'s very useful "Tables, Calculations, and Memoranda" have been revised, and have been added to with respect to Strength of Iron Girders. The List of District Surveyors has been revised up to January, 1874, and is the only published list in so convenient a form.——The current number of the *Quarterly* includes a long and very interesting account of Winckelmann and his works,—the wonderful career of the pauper son of a pauper cobbler from the bleak region of the Old March; who "first brought light into what had been up to his time a chaotic mass of desultory ideas and confused theories. He found the study of Art a string of disconnected, fanciful, and haphazard notions; he left it crystallised into a system, the theorems of which, as evolved by himself, have in all essentials stood the test of experience, and have been confirmed by the touchstone of progressive criticism."——Principal Dawson, of Montreal, has commenced in the *Leisure Hour* a short series of papers on Pre-historic Remains in America, which may throw light on some disputed questions of European archæology, and on the antiquity of man.——Professor E. Hull has communicated to the *Geological Magazine* for January, two papers "On the Microscopic Structure of Irish Granites," which are valuable contributions to this branch of inquiry.——A pile of books wants attention, and will have it forthwith.

Miscellanea.

Lecture on Electricity at the Charterhouse.—An interesting lecture has been delivered at the Charterhouse by Dr. B. W. Richardson, F.R.S., on "The Original Discoveries in Electricity of Stephen Gray," first Copley Medallist of the Royal Society, who had been a brother of the Charterhouse from 1719 to 1735. A considerable number of guests assembled in the great hall. Stephen Gray first discovered that the electric power could be transmitted along cords or wires, the result being that of electrical action at a distance from the exciting cause. Trying these experiments led him to discover the important principles of conductors and insulators. Induction soon followed, and at the house of Mr. Granville Wheeler he laid what might be called the first electric telegraph, by which, on the 14th of June, 1729, he transmitted electricity along 870 ft. of wire insulated on silk thread stretched across between a series of pairs of poles. In 1731 the result of these experiments was laid before the Royal Society. Gray was soon afterwards admitted a Fellow, and a little later was presented with the Fothergillian gold medal. He continued to experiment in electricity until his death, which occurred on the 15th February, 1735. He predicted that some day the electric spark would be produced so as to resemble lightning, and even went so far as to suggest that lightning was electricity.

The William Salt Library, Stafford.—The dedication to the public of the literary collection called the William Salt Library, has taken place. The premises in Stafford Market-square, long known as the Old Bank, have been adapted for the purpose. The reading-room comprises the bank and adjacent offices, and is 38 ft. by 17 ft., having also a convenient ante-room through which the public are admitted, out of Bank-passage, and from which an upper room of the same dimensions as the library is approached, containing as yet the less presentable portions of the collection. The reading-room presents a comfortable appearance. It is fitted and furnished with polished oak, the greater portion of the bookshelves being the gift of Mrs. W. Salt. The floor is covered with linoleum, and the whole premises are warmed by hot-water pipes. Although the principal wealth of this library consists in its collection of books, MSS. (original and transcribed), drawings, deeds, and engravings illustrative of the county of Stafford, it is interesting besides to the general reader, as containing representatives, more or less, of almost every department of general literature.

London Fire Statistics.—The report of the chief officer of the Metropolitan Fire Brigade on the state of the brigade and the fires in London, during the year 1873, has been issued in a printed form. It states, that in 1873 there were 1,703 calls for fires. Of these, 83 were false alarms, 72 chimney alarms, and 1,548 were calls for fires, of which 166 resulted in serious damage, and 1,382 in slight damage. The fires of 1873, compared with the average of the last ten years, show a decrease of 17. The proportion of serious to slight losses in 1873,—166 to 1,382,—is about as favourable as hitherto. The reporter, Captain Shaw, calls attention, as he has often done before, to the enormous height to which buildings are erected in London, without any precautions whatever for the safety of life in the upper stories. The fire-escape in use can only be made to reach 50 ft.; consequently, persons living in lofty buildings should invariably make their own arrangements for getting down externally to spots within reach of these machines. Amongst other plans he points to iron ladders and balconies, under special arrangements.

Chislehurst.—On Saturday morning the new Petty Sessions Court was opened at Chislehurst. The building has been erected in the rear of the new police-station, just completed, near Camden House. There has never been a police-court at Chislehurst before, and the ordinary cases of persons charged before magistrates have hitherto been heard at Sidcup.

Honour to a Sheffield Manufacturer.—It is pleasant to learn that the Emperor of Austria has conferred the Knight's Cross of the Order of Francis Joseph upon Mr. Joseph B. Jackson, Etna Works, Sheffield. The decoration is a gold cross, bearing in the centre the Emperor's initials, and suspended from a crimson riband. The following is a translation of the decree:—"His Imperial and Royal Apostolic Majesty the Emperor of Austria has, under his most august signature of the 27th October, 1873, been most graciously pleased to bestow upon Mr. Joseph B. Jackson, of Sheffield, saw manufacturer, the Knight's Cross of the Order of Francis Joseph." The Secretary of the British Commission when sending the order to Mr. Jackson, said: "It is a source of great gratification that I am allowed thus to convey to you a just appreciation of the great excellence of the manufactures of your world-known firm."

Land near Chichester.—A sale of property situated in Chichester and the neighbourhood was conducted by Messrs. Wyatt & Son, at the Dolphin Hotel, last week. The property consisted of about seventeen acres of leasehold meadow land at New Fishbourne, and two freehold houses in Chichester; but the land, being leasehold for long periods, was really equal to freehold. Lot 1, consisting of 3a. 1r. 14p. of meadow land, near the railway crossing at Fishbourne, and let at 16*l.* per annum, was knocked down to Mr. F. C. Sparkes, of Wittering, for 740*l.* Lot 2, separated from the last lot by the railway, and comprising 1a. 0r. 30p., fell to the nod of Mr. F. N. Hobgen for 165*l.* Lot 3, also to the north of the railway, and fronting the road running to Salt-hill, consisted of 5a. 1r. 30p. Mr. Sparkes was again the purchaser for 700*l.*

A New Trade Union.—On Saturday night a meeting was held, consisting of delegates from the London Street Masons, at the Marquis of Granby, Granby-street, New-cut, to draw up rules for the formation of a society for the men. The objects of the society are to promote the general welfare of the men engaged in the stone-paving business in London—generally known as York and granite masons—apart from paviours, the number in the metropolis being nearly 3,000. The body of men are constantly receiving accessions from the provinces, and it is now intended to consolidate the whole body throughout the kingdom in one society, as has been done through the present organisation of the general masons. Rules were drawn up on Saturday, and will be submitted to a future meeting.

New Reredos for St. Paul's Church, Carlisle.—A new carved oak reredos has been erected in this church. It is the gift of the vicar, the Rev. F. Richardson, and of his wife; and it is intended as a memorial of Mrs. Richardson's father, who took a warm interest in the church. The style of the reredos is Gothic, in harmony with the architecture of the church, and its ornaments are entirely of a floriated character, no figures having been introduced. The arcade stretches across the whole breadth of the chancel, and there are two returns extending towards the communion rails. Messrs. Habershon & Brock, architects of the church, furnished the drawings, and the work has been executed by Messrs. Jonathan Kirkbride & Sons, the carver being Mr. Riddell.

London by the Thames, Seventeenth Century.—Messrs. Hogarth, of Mount-street, Grosvenor-square, have on view a picture representing the river-side of Westminster, with the landing of Catherine of Braganza at the Palace of Whitehall, attended by the civic authorities. The picture is probably the work of Thomas Wyck, sometimes called Van Wyck, who came to England at the Restoration, and settled here, where he painted, amongst other known works, a view of the parade in St. James's Park, with King Charles II. and his court walking. He died about 1682. The picture at Messrs. Hogarth's is interesting as showing part of London no longer remaining, and the stateliness which accompanied such a procession at the period of the event in question.

A Shaky Steeple.—A vestry meeting of the parishioners of Holy Trinity, Stockton, have decided on taking down and rebuilding 22 ft. of the steeple, in consequence of its shaky and dilapidated condition. The cost is to be defrayed by subscription, and the work will be carried out under the superintendence of Messrs. Weatherill & Moses, of Stockton, architects.

Annual Meeting of Altrincham Master Builders' Association.—The fifth annual meeting of the Altrincham Builders' Association has been held for the transaction of the usual business and appointment of officers for the ensuing year. Mr. Henry Kenyon was elected president; Messrs. J. L. Owen, Drinkwater, and Buck, vice-presidents; Messrs. Kenyon and Douglas, trustees; and a committee of seven members. Mr. James Hamilton was re-elected secretary and treasurer. After a vote of thanks to Mr. Kirkley, of Sale, the retiring president, who had occupied the chair, the meeting adjourned for the annual dinner, which was provided in the Station Hotel. Mr. Kenyon occupied the chair as president for the year, and Mr. J. L. Owen the vice-chair.

Sale of Ely Chapel.—Messrs. Edwin Fox & Bousfield had a numerous company on Wednesday morning last, when they offered for sale what they described as "the grand old edifice, situated in Ely-place, Holborn, formerly the private chapel of the Bishop of Ely, but now designated as St. Etheldreda's Chapel, and used for the purpose of Welsh service." The first offer was 2,000*l.*, and the edifice was eventually sold for 5,250*l.* Mr. St. Quintin, of the Royal Exchange Buildings, was the purchaser, and he declined to say for what purpose it had been bought. Let us hope, for preservation,—whatever we may fear. Several well-known architects and antiquaries were present, but we are not aware that they had any funds at command for the purpose of buying the chapel.

A Cemetery for Wellington.—At a vestry meeting held at All Saints' Church, Wellington, in connexion with the Local Burial Board, for the purpose of obtaining the sanction of the ratepayers to the borrowing of 3,500*l.*, required for the erection of mortuary chapels and lodge, and the laying out of a cemetery, &c., the clerk to the Board, entered into the particulars of the sum asked for, as follows:—Erection of the two chapels, 2,500*l.*; lodge and gates, 375*l.*; laying out of paths, 260*l.*; plants and shrubs, 100*l.*; architect's commission, 160*l.*; leaving a margin of some 105*l.* for contingent expenses. Of 1,750*l.* already borrowed for the payment of the land and drainage there remained 309*l.* in hand. The consent of the meeting was given to the Board to raise the money.

A Public Aquarium for Liverpool.—For some time past a project has been on foot for the erection of an aquarium and winter garden in Liverpool, and Mr. Willert Beale, well known to musical and artistic fame, has now succeeded in forming a company for this purpose, and it is stated that the greater portion of the capital has been already subscribed without any general appeal to the public at large. A favourable site has been secured in close proximity to the Philharmonic Hall, and it is intended to erect an aquarium, conservatory, concert-room, and other necessary buildings. The architect, Mr. C. H. Driver, estimates that the cost would be about 45,000*l.*

Liverpool Architectural Society.—The fifth meeting of the session of this Society was held on Wednesday in last week, at the Royal Institution, Colquitt-street; Mr. T. D. Barry presiding. Mr. W. H. Picton read an interesting paper describing the architectural features of many of the public buildings, which he had visited in company with Mr. Banner, of this town, during a short tour in Normandy and Brittany. The reading of the paper was illustrated by sketches, many of them taken on the spot by Mr. Picton and Mr. Banner. At the close of the reading, a cordial vote of thanks was passed to Mr. Picton for his paper.

Sale of Land, Leicester.—Last week Mr. Warner (Warner, Sheppard, & Wade) sold by auction, at the George Hotel, about twelve acres of building land and six cottages, situate at Belgrave. The biddings for the building land were spirited, lot 1, consisting of 4a. 2r. 6p, situate in Checkitt's-close, being knocked down to Mr. Stockdale Harrison at 550*l.* per acre. Lot 2, comprising 7a. 1r. 8p., adjoining lot 1, and extending to the Melton-road, speedily reached 500*l.* per acre, and was eventually knocked down to Mr. S. Harrison at 540*l.* per acre.

New Steel Works in Warrington.—We understand that new steel works are about to be started in Warrington by a number of gentlemen who are connected with another large local manufacturing concern.

Relics from Russia.—Of the rites, formulæ, and decoration of the Greek churches in Russia we know but little, and particularly of the relics preserved in their monasteries and churches. We understand that Mr. John Leighton, who has made a tour through Russia, has obtained much information, and has brought back many specimens of the traditional art. He extended his visit through Circassia into Georgia, returning by way of the Crimea, staying at Livadia, Orianda, Sebastopol, and the ancient towns upon the coast.

International Exhibition at Geneva.—There will be an International Exhibition at Geneva next year. The building will include a huge dome, to be the largest of its kind, and a special feature will be a colossal column in the interior, from which visitors will have a bird's-eye view of the whole of the Exhibition, and a panorama of Lake Leman, the mountains of the Jura, the Swiss Alps, and Mont Blanc. The Exhibition will be close to the lake, and piers will project into the water. On these will be erected summer-houses and refreshment-rooms.

Pearson Memorial Windows, Darlington. We have been informed that the committee met a few days ago to open the tenders, and inspect the designs, which have been sent in for the painted windows proposed to be erected in the chancel of Darlington Parish Church, to the memory of the late Rev. J. G. Pearson, who was vicar for sixteen years. A unanimous opinion was expressed in favour of the illustrations submitted by Mr. G. J. Baguley, of Newcastle-upon-Tyne.

Building Land at Goole.—Mr. John Bennett, of Grove House, Goole, has purchased from the Right Hon. T. Sothern Estcourt the large field on Booth Ferry-road. Hitherto, according to the *Goole Times*, so far as this field was concerned, application to Mr. Estcourt's agent for building sites have been without result; but now the land has been laid out in streets and terraces, and a new town will spring up very soon upon it. The extent of the field is 77,824 square yards.

A New Hall for Tunbridge Wells.—It has been resolved by the Local Benefit Societies to form a limited liability company with a capital of 4,000*l.*, to purchase a site in Basinghall-street, Tunbridge Wells, and to erect a hall thereon, with club-room, coffee-room, committee-room, &c., and a smoking-room, and other accommodation. The club-room will be 53 ft. by 25 ft. A sum of 10*l.* will be offered for the best plan for a building suitable for the purposes required.

Injuries to Statues in Transit.—In the Court of Exchequer an action was brought to recover compensation for injuries alleged to have been done during carriage to two valuable bronze figures entrusted by Mr. Pinti, a dealer in works of art, to Mr. Atkins, as a carrier from London to Naples and back. The plaintiff was nonsuited on the ground that there was no evidence that the goods had been received by the defendant as a carrier; he was merely an agent.

Lamplighters superseded.—A trial of an electric apparatus for lighting street lamps has been made in Washington, with a view to its adoption by that city. The lamps, for the distance of one mile, were lighted and extinguished instantly, several times, the apparatus turning on the gas and igniting it at the same moment. Whether there is anything new in this beyond what has already been tried in this country we do not see.

TENDERS

For sewerage and sewage works, Hoddesdon. Mr. T. W. Grindle, engineer. Quantities supplied:—

Hampton, Hoddesdon	£7,280	0	0
Neave & Sons, Brompton	6,500	0	0
Green & Sons, Stanstead	5,300	0	0
Harris, Camberwell	5,148	0	0
Hunt, Hoddesdon	5,145	0	0
Marshall, Brighton	5,100	0	0
King, Hastings	5,100	0	0
Knight & Son, Mile-end	4,998	0	0
Dawson, Cheapside	4,990	0	0
Moore, 1, Lombard-court	4,828	0	0
Harris, Stratford	4,779	0	0
Jackson, Stratford	4,770	0	0
Docwra, London	4,695	0	0
Bloomfield, Tottenham	4,477	0	0
Potter, Stepney (accepted)	4,207	0	0

For alterations and repairs to 440, Edgware-road, for Mr. A. Temple:—

Harris	£315	10	0